'GRAM—INMEDICI, CALCUTTA
'PHONE—CENTRAL 2197

Contents on Cover Page 3

JOURNAL

OF THE

Indian Medical Association

VOLUME XX
NUMBER 7

CALCUTTA
APRIL 1951

Office of Association Hd. Qrs.
Hanging Bridge, Faiz Bazar,
Daryaganj, Delhi.

Office of the Journal
23, Samavaya Mansions,
Corporation Place, Calcutta 13.

Annual Subscription
Inland Rs. 18/-
Foreign £1 10s. or $7

In all stages of Intestinal Amœbiasis

PRESCRIBE

Entrokin

B.C.P.W. Iodochloroxyquinoline

LOW TOXICITY
HIGH THERAPEUTIC VALUE

•

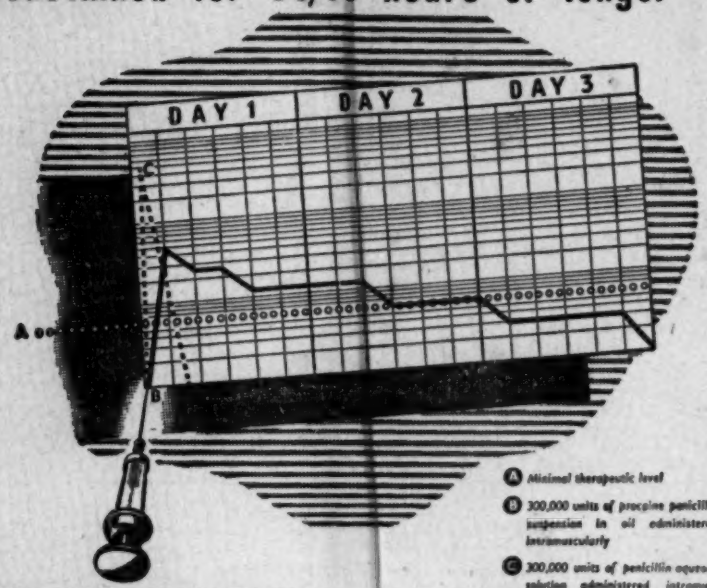
Also useful in
OTHER INTESTINAL INFECTIONS
OF VARIOUS AETIOLOGY

• •
•

BENGAL CHEMICAL CALCUTTA :: BOMBAY

PENICILLIN BLOOD LEVELS

sustained for 36/48 hours or longer



Ⓐ Minimal therapeutic level

Ⓑ 300,000 units of procaine penicillin suspension in oil administered intramuscularly

Ⓒ 300,000 units of penicillin aqueous solution administered intramuscularly

'AVLOPROCIL'

'Avloprocil' contains the procaine salt of crystalline penicillin G in oily suspension (300,000 units per mg.) with aluminium stearate, and offers important advantages :—

- Therapeutic blood levels of penicillin maintained for at least 36 to 48 hours.
- Effective penicillin therapy achieved with a single daily injection of 1 c.c.
- Administration is free from irritation and pain.

PACKINGS:

10 c.c. vials (300,000 units of penicillin per cc.) singly and in boxes of 5.
1 c.c. vials (300,000 units of penicillin per c.c.) singly and in boxes of 10.

Literature and further information on request from our nearest Office:

IMPERIAL CHEMICAL INDUSTRIES (INDIA) LTD.
Calcutta Bombay Madras Cochin New Delhi Kanpur

AND

IMPERIAL CHEMICAL INDUSTRIES (EXPORT) LTD.
(A subsidiary company of Imperial Chemical Industries Ltd.)
Karachi Chittagong Rangoon Colombo

ICI
A SYMBOL OF QUALITY

All is not lost

Contrary to appearances, our patient's recovery is practically assured. One injection of LEDERCILLIN* PARENTERAL Crystalline Procaine Penicillin G with Buffered Crystalline Penicillin G Potassium, *Lederle* will protect him for many, many hours from the common surgical infecting organisms, by its *double action*. This new product exhibits the following advantages.

ADVANTAGES . . .

Lederle was the first to introduce a *double-action new form of penicillin* which provides *rapid* and *prolonged* action.

LEDERCILLIN* PARENTERAL *Lederle* provides an initial flooding of the tissues in addition to a maintenance level up to 24 hours or longer.

LEDERCILLIN* PARENTERAL *Lederle* includes a salt of penicillin —procaine penicillin—that is less likely to produce penicillin allergy than is potassium penicillin.

LEDERCILLIN* PARENTERAL *Lederle* forms a solution-suspension in an aqueous medium. Procaine penicillin goes into suspension and the potassium penicillin dissolves. The vehicle for this injection is water.

LEDERCILLIN* PARENTERAL *Lederle* is easy to administer, flows freely in the syringe and needle, and is completely absorbed in the tissues. It can be given quickly with no discomfort from unabsorbed intramuscular material.

LEDERCILLIN* PARENTERAL *Lederle* is stable in dry form at room temperature. After it has been brought into aqueous suspension, it is stable at refrigerator temperature for one week.

SPERSOIDS* *and* TROCHES *containing procaine penicillin are also available.*

LEDERCILLIN* Crystalline Procaine Penicillin G *Lederle*

Parenteral: 1 dose—300,000 Units Crystalline Procaine Penicillin G and 100,000 Units Buffered Crystalline Penicillin G Potassium.

Spersoids*: Jars of 75 Gms. (25 doses)—a pleasantly chocolate flavored powder containing 50,000 Units Buffered Crystalline Procaine Penicillin G per dose.

Troches: Bottles of 25, 5,000 Units Crystalline Procaine Penicillin G per troche.

BUFFERED CRYSTALLINE PENICILLIN G POTASSIUM

Lederle: Vials of 200,000, 500,000, and 1,000,000 units each.

PENLATOR* Crystalline Penicillin G Sodium for Inhalation Therapy

Lederle: 3 cartridges—100,000 units per cartridge and 1 inhaler.

*Trade Mark

Lederle

LEDERLE LABORATORIES (INDIA) LTD.
P. O. B. 1994, BOMBAY 1.

LEDERLE LABORATORIES (PAKISTAN) LTD.
P. O. B. 361, SADAR, KARACHI 3.

CALCHEMICO'S
RAUWOLFIA PREPARATIONS

Containing total Alkaloids of Rauwolfia serpentina :—

- RAUWOLFINA TABLETS.
- RAUWOLFINA COMPOUND TABLETS (WITH PHENOBARBITONE & THEOBROMINE).
- RAUWOLFINA LIQUID.
- SANTINA (RAUWOLFINA POWDER).

for EFFICACY & RELIEF in HYPERTENSION

Their effects are—

- SEDATIVE
- RELIABLE
- REFRESHING
- NERVE-SOOTHING.

in all varieties of cases of hypertension both benign and malignant.

Literatures on request.

THE CALCUTTA CHEMICAL CO., LTD.

35, PANDITIA ROAD, CALCUTTA-29.

CALCHEMICO'S

ACOLAN

Non-specific Protein Therapy.

A mixture of proteins derived from milk and protozoal growths for use as intramuscular injection in graduated strengths, which is essential in non-specific therapy as it is in specific (vaccine, etc.) therapy.

DOLORIN

An Effective and Harmless Analgesic.

Contains—Acetylsalicylic Acid, Acet-phenetidin, Codeine, Caffeine and Calcium Gluconate. Indicated in all forms of pains, also as an antipyretic, in Influenza, Dengue, etc. (Packing: Tubes of 10 tablets and bottles of 25 tablets).

HEPATINA

A potent blood-forming tonic.

Contains Liver Extract (exclusively from goat), Iron, Strychnine, Phosphorus, Senna and liquid extract of malt. Indicated as a restorative after prolonged illness, maintenance treatment after malaraia and a pick-up after childbirth. (Packing: Bottles of 4 and 8 ounces).

Detailed literatures on request.

THE CALCUTTA CHEMICAL CO., LTD.

35, PANDITIA ROAD, CALCUTTA-29.

3 E.D. *Liver preparations*

'E.D.' LIVER EXTRACT

Crude Extract of Fresh Liver

Prepared according to standard pharmacopœial methods from fresh livers of carefully selected animals 'E.D.' Liver Extract is a highly potent preparation that stimulates rapid production of reticulocytes in patients suffering from macrocytic anæmias, disseminated sclerosis and sprue. Crude, yet painless. Contains 10-12 micrograms of vitamin B_{12} per c.c.

In 2 c.c. ampoules and 10 c.c. vials.

HEPAPLEXIN

BRAND

'E.D.' Liver Extract with vitamins B complex & C

Addition of leading vitamins of B group and C with a highly potent liver extract like 'E.D.' Liver Extract has made Hepaplexin an ideal preparation for liver therapy anæmias and anæmias associated with B complex avitaminosis. May also be used in clinical and sub-clinical B complex deficiency states.

In 10 c.c. vials.

FERROSOL

+ liver-yeast-iron tonic

Ferrosol provides patients with iron in a form in which it is best absorbed in the system—colloidal iron hydroxide. Liver extract acts as a good adjuvant to iron therapy and yeast concentrate supplies B vitamins from their richest natural source. Ferrosol is thus a valuable aid to the treatment of nutritional deficiencies and anæmia of all varieties.

In 6 oz. and 1 lb. bottles.

EASTERN DRUG CO., LTD.

CALCUTTA

When the Liver is Threatened . . .

Cirrhosis of the liver used generally to prove fatal. But it is now known that a low fat, high protein–B Complex diet containing rich amounts of methionine will protect and restore normal hepatic function.

However, in order to supply adequate methionine, two gallons of milk or two dozen eggs or two to three pounds of red meat would have to be ingested daily. Moreover, few seriously ill patients are able to eat such large amounts of protein food.

Instead, correct doses of Wyeth's 'Meonine' are capable of dispelling fat from the liver cells, irrespective of the quantities of food ingested.

Prescribe

'MEONINE'

TRADE MARK

dl-methionine

Wyeth

JOHN WYETH & BROTHER LIMITED, LONDON

Distributors in India and Burma: GEOFFREY MANNERS & COMPANY, LIMITED
Bombay • Calcutta • Delhi • Madras • Rangoon

Pakistan: GEOFFREY MANNERS & CO., (PAKISTAN) LTD. Lahore • Karachi • Chittagong

Ceylon: MILLERS LIMITED, Colombo.

Malaya: ANGLO-THAI CORPORATION LIMITED, Singapore & Branches

Stronachs

"CIPLA Sales Depot, P 33, Ganesh Ch. Avenue, Calcutta—12"

Listlessness
often indicates
IRON
DEFICIENCY

The commonest anæmias are **IRON DEFICIENCY** anæmias

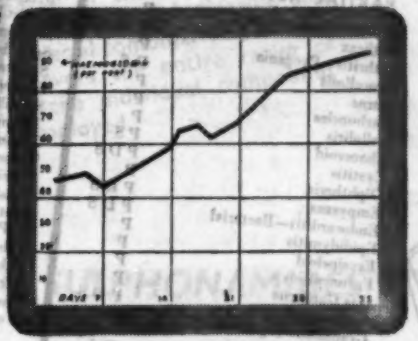
In day to day practice, anæmia caused by deficiency of iron is seen more frequently than any other condition of nutritional origin. Iron in the most effective form—ferrous sulphate—provides the one treatment that ensures success.

RESPONSE

To

3 *FERSOLATE*

Tablets a day



Response to 3 Fersolate Tablets daily; a case of quite severe iron deficiency in a woman aged 43.

Fersolate, the standard and most widely used treatment of all iron deficiency (hypochromic) anæmias, combines ferrous sulphate with the important additional hæmopoietic stimulants, copper and manganese. Three Fersolate Tablets a day produce the maximum rate of regeneration (1 to 2 per cent Hb) and the patient's well-being is rapidly established.

GLAXO

FERSOLATE Tablets

Sugar coating makes Fersolate tablets easy to take. Each tablet contains 3 grains of exsiccated ferrous sulphate and the 'trace' minerals copper and manganese. Fersolate tablets may be obtained in bottles of 100 or better still and more economical, the 500 tablets bottle.

GLAXO LABORATORIES (INDIA) LTD. Bombay • Calcutta • Madras

Stronatka

MERCK & CO., INC. ANTIBIOTICS...

A Roll Call of Effective Uses

MERCK & CO., Inc. ANTIBIOTICS—with their clinical efficacy *firmly established* in a wide range of infections—are indispensable tools of modern therapy. As a pioneer and leading producer in this field, Merck & Co., Inc. has developed antibiotics of unexcelled purity. The superior qualities of these products have served to increase and extend the usefulness of antibiotic therapy.

Above is a partial list of the many conditions in which these products may be indicated. The symbols D, P, and S are used to designate the antibiotics which are likely to be useful in most cases of the conditions specified. The particular agent to be employed will, of course, depend upon the nature of the disease process and the specific susceptibility of the infecting micro-organism.

MERCK (NORTH-AMERICA) INC.
161 Avenue of the Americas, New York 13, N.Y., U.S.A.

EXPORT SUBSIDIARY OF MERCK & CO., Inc. Manufacturing Chemists Rahway, N.J., U.S.A.

***SALES REPRESENTATIVE*: L. D. SEYMOUR & CO., Inc.**
Bombay, Calcutta, Delhi, Madras, Colombo, Karachi, Nova-Goa.

ONLY ONE CAN BE FIRST

More than just a new drug, 'Sulphatriad' is a fundamentally new idea in sulpha-therapy. Specifically designed to eliminate crystalluria, 'Sulphatriad' permits you to administer full therapeutic doses without fear of renal complications.

Comprised of three of the most powerful sulphonamides—sulphadiazine, sulphathiazole and sulphamerazine—in a special combination based on clinical research, it covers the entire range of conditions for which the individual compounds have been hitherto employed.

AMONG SULPHONAMIDES IT'S

'SULPHATRIAD'

Brand COMPOUND SULPHONAMIDE TABLETS

EACH TABLET CONTAINS		SUPPLIES:
Sulphadiazine	0·185 Gm.	25 × 0·50 Gm. tablets
Sulphathiazole	0·185 Gm.	100 × 0·50 Gm. tablets
Sulphamerazine	0·130 Gm.	500 × 0·50 Gm. tablets

Literature on Request

Manufactured by MAY & BAKER LTD.

* Trade Mark

Distributors: MAY & BAKER (INDIA) LTD., BOMBAY-CALCUTTA-MADRAS-LUCKNOW

361

P. A. S. 'WB'

Sodium para-amino Salicylate

IN THE AMBULATORY TREATMENT OF

TUBERCULOSIS

Containers of 100 and 250 g. Sodium Powder
Containers of 100 and 250 tablets of
0.41 g. sugar and enteric-coated.

"WB" Specialities

ANAPELLIN	Nicotinic acid 50 x 100 mg. ampoules	... Pellagra and associated symptoms.
ANTHROXIL	... Thiouracil 0.05, 0.1 & 0.2 tablets	... Hyperthyroidism therapy.
DITHRANOL	... 'WB' Brand, 1 oz powder	... Fungal infections of the skin.
KETOCET	... Acetomenaphthone 2 mg. & 10 mg. tablets	... Treatment of all haemorragic conditions.
PELLAGIN	... Nicotinamide 50 & 100 mg. tablets 0.1 mg. ampoules	... Prophylaxis and treatment of defficiency states, pellagra, glossitis, diarrhoea etc.
STERAMIDE	... 'WB' Sulphacetamide 10% & 30% solutions 1 drachm Eye Ointment	... Ocular infections. Blepharitis, conjunctivitis.
	15 g. Skin Ointment	... Skin infections. Impetigo contagiosa, keloid acne etc.
STIMULIN	... 25% Nikethamide 2 cc. ampoules 15 cc. liquid oral	... Circulatory and cardiac stimulant.

THE ORIGINAL MANUFACTURE OF

WARD, BLENKINSOP & CO. LTD.,
LONDON :: WIDNES.
ENGLAND

SOLE IMPORTERS FOR INDIA

WARD, BLENKINSOP & CO. (India) LTD.,
1-110, Haines Road,
Phone : 40060 Worli BOMBAY - 18

IMMEDIATE PEAK LEVELS

With Pen-Aqua

Penicillin for injection in an aqueous vehicle at 24-hour intervals, with a rapid peak penicillin blood level to over-whelm infection at the outset.
Procaine Penicillin G. 300,000 u./cc. and Potassium Penicillin G. 100,000 u./cc., for suspension/solution in aqueous media.
Five-Dose Vials, 5 cc.; Single-Dose Vials, 1 cc.

In addition

(1) SUSTAINED THERAPEUTIC BLOOD LEVELS FOR 24 HOURS AND OVER
(2) EASE OF ADMINISTRATION
(3) ECONOMY

infa

Manufactured by Bristol Laboratories, Inc., Syracuse, New York.

DISTRIBUTED IN INDIA BY

infa LTD. P. O. Box 1041, Bombay 1.

BIOFOL 12

B. Complex with B_{12} and Folic Acid.

Recent researches show that B_{12} and FOLIC ACID are involved at different stages of synthetic pathway which eventually leads to desoxyribosides and that one CANNOT REPLACE the other.

FORMULA per c.c.

Vitamin B_1 10 mgms. Vitamin B_2 1 mg.
Calcium Pentothenate 4 mgs. Nicotinamide 100 mgs.
Pyridoxine HCL 2 mgs. Folic Acid 0.25 mgs.
Vitamin B_{12} 5 mcmgs.

PACKAGES :— Box 10 x 1 c.c., 25 x 1 c.c. & 100 x 1 c.c.

Kindly ask for detailed literature and samples for clinical trial from—

MAC LABORATORIES LIMITED.

98, Sheikh Memon Street,

'Phone: 34551 BOMBAY No. 2 Grams: MACLON

PROFEX RAY

ALL AUTOMATIC X-RAY EQUIPMENT.

THEY ARE BUILT TO TILT AND ARE PRICED WITHIN YOUR REACH.

AVAILABLE IN : 20 M. A. 30 M. A. AND 100 M. A.

Please Write for Prices and Particulars to :

X-RAY AND ELECTROMEDICALS.

(INDIA)

DIVISION OF

INTERNATIONAL RADIOS AND TELEVISION Ltd.

MALABAR VIEW,

Phone. 22490. **CHOWPATTY SEA FACE,** Gram: GRAMORADIO.

BOMBAY 7.

ELIXIR B-COMPLEX

Recommended in all depressed and rundown conditions, for restoring appetite and strengthening the nerves, and for renewing vitality.

It contains all the important factors of B-Complex and the Glycerophosphates essential for improving the metabolism.

AVAILABLE IN PACKINGS OF 8 OZ. & 13 OZ.

"It is a restorative, vitalising tonic."

WORLI CHEMICAL WORKS LTD.
BOMBAY 18.

392

Asthmalin

Quick relief from the choking effects of Asthma.

Highly efficacious yet safe because of its judicious blend of healing ingredients.

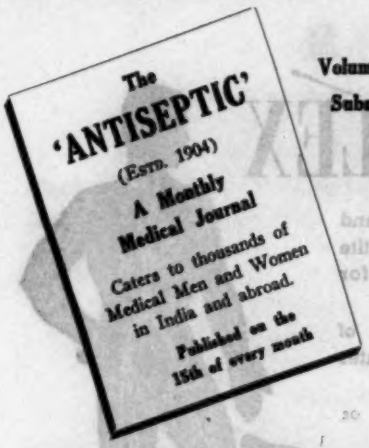
ASTHMALIN For Quick Relief from Asthma.

AVAILABLE IN CONTAINERS OF 25, 100 AND 500 TABLETS.

WORLI CHEMICAL WORKS LTD., BOMBAY 18.

396

'Please write for and get your Free Copy of "The Physician's Rest Hour."



Volume begins every January,
Subscription may commence
from any period.

Subscription:

'Antiseptic Rs. 7-8. or Sh. 15 a year Post paid. Single copy Re. 1.
'Health' Rs. 2-0. or Sh. 4 " " " " As. 3.
Both together Rs. 9. or 18 Sh. a year.

The Manager, 'ANTISEPTIC,' :: 323-24, Thambu Chetty St., :: Post Box 166, MADRAS - 1.
T'phone : 2163. T'gram : 'Antiseptic'.

LONDON :
Mr. A. Vernon Keith,
24-27, High Holborn,
Phone: Holborn 5922.

CALCUTTA :
Mr. O. Wheeler.
31, Beck Bagan Row,
Phone: Pk. 4630.

BOMBAY :
Mr. O. Wheeler,
10, Hemji Street,
Fort.

Sigcol
GLASS
SIGCOL GLASS IS THE MOST IMPORTANT FACTOR TO BUILD THE MODERN LABORATORIES AND INDUSTRIES
THE
SCIENTIFIC INDIAN GLASS CO LTD
6 CHURCH LANE - CALCUTTA

INJECTABLES

Safe & Dependable

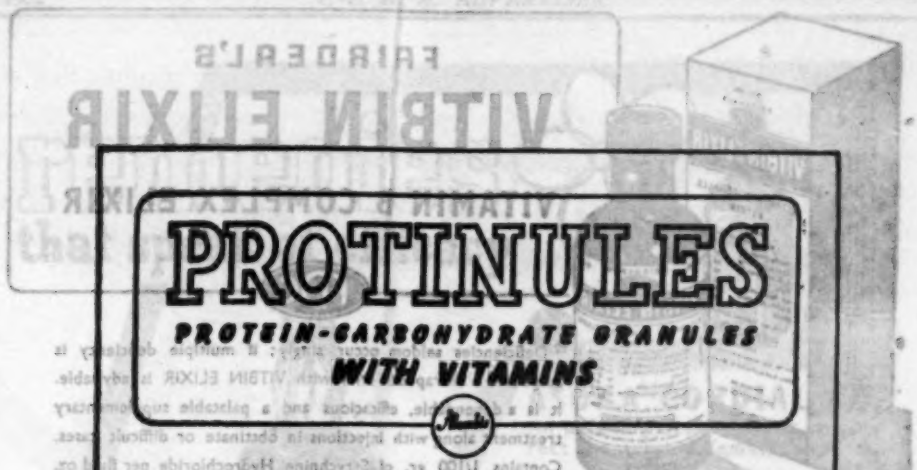
TRADE MARK I.T.L.

A wide range of parenteral preparations for meeting the growing requirements of the Medical Profession are processed in our Laboratories. They are made from Standard Chemicals employing double distilled and PYROGEN FREE water. Their containers (ampoules) undergo rigid neutrality tests before they are selected for use. These Injectables are therefore guaranteed to be absolutely safe and dependable.

The following are but a few of our wellknown Injectables:

*RETICULIN ... A potent extract of Liver
*HEXOPURIN ... A urinary Antiseptic
*CALCITOL ... Injectable Calcium Gluconate
*BEVITAMIN ... " Vitamin B_1
*CEVITAMIN ... " Vitamin C.
*GLUCOSE SOLN. " Pure Dextrose

The Mysore Industrial & Testing Laboratory. Ltd.,
Mallaswaram, Bangalore 3.



PROTINULES

PROTEIN-CARBOHYDRATE GRANULES WITH VITAMINS

A protein - carbohydrate - vitamin product of high biological value, presented in an easily digestible and readily absorbable form, to be used in conditions requiring increased protein intake. It supplies nutritionally important amino acids, high grade carbohydrates and principal vitamins.

COMPOSITION

Each ounce contains:

Proteins (Nx6·25)	15·00 Gms.	(30 K)
Carbohydrates derived from Cane, Milk, and Grain Sugars	9·00 Gms.	(30 K)
Vitamin B_1	3·00	Mgms.
Vitamin B_2	1·50	Mgms.
Vitamin B_6	1·50	Mgms.
Niacinamide	15·00	Mgms.
Calcium Pantothenate	1·50	Mgms.
Vitamin C	30·00	Mgms.
Vitamin A	5000	I. U.
Vitamin D	500	I. U.

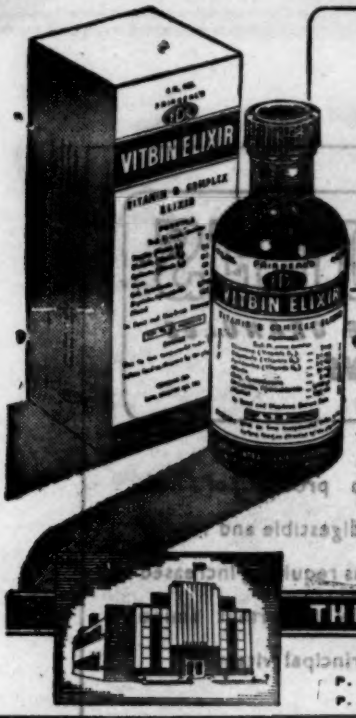
INDICATIONS

As a dietary supplement and nutritive tonic, Protinules is useful in prolonged fevers, wasting diseases, gastro-intestinal disorders, pre and post-operative conditions, severe burns, haemorrhages, convalescence and such other conditions of protein subnutrition or negative nitrogen balance.

Bottles of 3 ozs. & 8 ozs.

ALEMBIC CHEMICAL WORKS CO., LTD., BARODA.

AL 980



FAIRDEAL'S

VITBIN ELIXIR

VITAMIN B COMPLEX ELIXIR

FDC

● Deficiencies seldom occur singly: if multiple deficiency is suspected a therapeutic trial with VITBIN ELIXIR is advisable. It is a dependable, efficacious and a palatable supplementary treatment along with injections in obstinate or difficult cases. Contains 1/100 gr. of Strychnine Hydrochloride per fluid oz. which is also useful as a bitter stomachic. The most fastidious patient will take it without objection.

Packing: Bottles of 4 fl. ounces.

THE FAIRDEAL CORPORATION LTD.

142-48, Ghodbunder Road, Jogeshwari, Bombay

P. O. BAG 1925, BOMBAY · P. O. BOX 1366, DELHI
P. O. BOX 8913 CALCUTTA · P. O. BOX 1667, MADRAS

SPECIFICS FOR SYPHILIS AND YAWS.

THIO-SARMINE.

B. R. I.

Purest sulpharsenobenzene. A trivalent arsenical compound. Intramuscular (Painless), with solvent supplied free. Also used satisfactorily in "Eosinophilic Lungs," relapsing fever and Filariasis. May be used intravenously also, with redistilled water as solvent.

Supplied in doses of ·075, ·15, ·3, ·45 ·6 grm. with solvent in a carton.

ACTI-BISMUTH

B. R. I.

Bismuth in ultra-microscopic suspension, activated, painless intramuscular injection. Obtained in 10 c.c. rubber-capped phials and 1 c.c. ampoules, six in a box.

THE BRAHMACHARI RESEARCH INSTITUTE.

82-3, Cornwallis Street, CALCUTTA-4

remedies
that speak of efficacy

ASOKA CORDIAL CO.
An unfailing uterine Tonic to correct intractable female diseases.

VINOPHOS
A quick pick-me-up containing Glycerophosphates, Pepsin, Malt Extract and Alcohol in balanced proportions.

I.M.S.
LABORATORY LTD.
5, ROYAL EXCHANGE PLACE, CALCUTTA.

ELIXIR
BROMO VALERIAN
COMPOUND
A nervine Tonic—sedative and antispasmodic, indispensable in Hysteria.

CAFOLIN
A rational Cough Mixture. An effective combination of well known indigenous herbs and B. P. drugs.

VITALAX
The Vitamin Laxative. Curative and Preventive. Containing vitamin B-Complex and Phenolpthalein.

Stadmeed

AMINOZYME

Amino acids cum Enzymes

Supplies
Essential Amino Acids,
Vitamins and Enzymes
for
Sound Nutrition.

Each fluid ounce contains :-

Amino Acids	20% W/V.
Proteolytic Enzymes	10 grs.
Amylolytic Enzymes	5 grs.
Lypolytic Enzymes	5 grs.
Folic Acid	1·5 mg.

Vitamin B complex & C with other necessary adjuvants.

Indicated in Malnutrition due to digestive disturbances.

STANDARD MEDICAL RESEARCH INSTITUTE LTD. CALCUTTA

DOSAGE

Ten to twelve intramuscular injections of Stibanate 5 c.c. each (containing 100 mgs. pentavalent antimony per c.c.) depending on the antimony tolerance of the patient.

The injections are absolutely painless.

FOR THE TREATMENT OF KALA-AZAR, FILARIASIS, POST KALA-AZAR DERMAL LEISHMANIASIS, ORIENTAL SORE

COMPOSITION

Sodium antimony gluconate solution containing 100 mgs. pentavalent antimony per c.c.

Mode of Issue:—30 c.c. R.C. Vials.

Stibanate

SODIUM ANTIMONY GLUCONATE

For further particulars, please write to

GLUCONATE LIMITED

115, PRINSEP STREET, CALCUTTA 13.

HI-NUTRON

PURE ESSENCE OF CHOICE CHICKEN

A highly nutritive protein food for oral administration in severe illness and exhaustion. Easily assimilable and providing immediate energy, HI-NUTRON aids in the management of diseases and the promotion of convalescence.

Packed in oral ampoules of 5 and 10 c. c.

LITERATURE ON REQUEST.

HIND CHEMICALS LTD.

HEAD OFFICE: SIRCAR ROAD KANPUR | BOMBAY BRANCH: MUBARAK MANZIL APOLLO STREET | LUCKNOW DEPOT: MAHATMA GANDHI ROAD

405

Hi-Enterol

Iodochloroxyquinoline

A non-toxic, chemo-therapeutic agent for the treatment of acute and chronic Amoebic Dysentery.

Packed in tubes of 20, bottles of 100 and 500 tablets of 0.25 gm.

LITERATURE ON REQUEST

HIND CHEMICALS LTD.

HEAD OFFICE: SIRCAR ROAD KANPUR | BOMBAY BRANCH: MUBARAK MANZIL APOLLO STREET | LUCKNOW DEPOT: MAHATMA GANDHI ROAD

DIGESTIN

for impaired digestion

COMPOSITION:

Each Fluid Drachm represents :—

Pepsin	...	...	...	2.5 grs.
Papain	...	...	...	2.5 grs.
Vitamin B_1	...	...	...	0.0125 gr.
Sodium Glycerophosphate	...		...	2.0 grs.
Potassium Glycerophos	...		...	2.0 grs.
Magnesium Glycerophos	...		...	1.0 gr.
Manganese Glycerophos	...		...	0.025 gr.
Flavouring Essence	...		...	1/20 m.
Syrup Simplex up to	...			1 fl. drachm.
Alcohol	...	...		17.0% Proof.

Samples and Literatures will be supplied on request.

INDIAN CHEMICAL & THERAPEUTICAL WORKS LTD.

68, Barrackpore Trunk Road • Calcutta—2.

MADRAS DEPOT.—— 14-15, SECOND LINE BEACH • MADRAS—1.

ICT/2

NOW AVAILABLE EVERYWHERE

P.A.S.

TABLETS

LOW TOXICITY ADJUVANT IN TUBERCULOSIS

PARASALINDON

PARA-AMINO-SALICYLIC-ACID

5 GRAINS PER TABLET. IN BOTTLES OF 200, 500 AND 1,000 TABLETS

INDON PHARMACEUTICALS

Manufactured by

INDO-PHARMA PHARMACEUTICAL WORKS

BOMBAY 14 CALCUTTA 13

LITERATURE ON REQUEST

The perfect Rx

Easy, safe, simple. No mother could find any difficulty in following the doctor's prescription for this baby food. LACTOGEN eliminates complicated mixing—it is only necessary to add the required amount of powder to the measured quantity of warm (previously boiled) water and whisk with a fork.

The more important advantages of LACTOGEN are:—

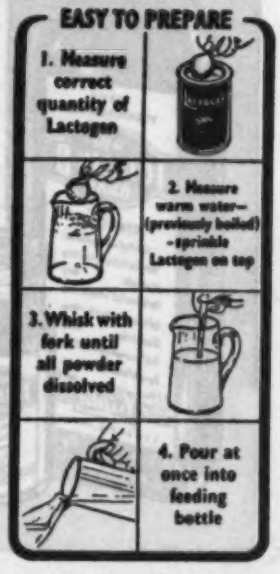
(1) Completely balanced formula of constant composition and extreme purity.

(2) Prepared by Nestlé's exclusive spray process which ensures:—
- (a) Improved digestibility.
- (b) Avoidance of fat separation during feeding.
- (c) A finer powder, more readily soluble.
- (d) A compact powder permitting use of a smaller tin.

(3) Suitably fortified to provide adequate (but not excessive) intake, based on standards recommended by the National Research Council, Washington, of essential vitamins A and D and organic iron.

(4) Lasting freshness.

(5) A product prepared by the world's largest infant food specialists and used with excellent results throughout the world.


EASY TO PREPARE
1. Measure correct quantity of Lactogen
2. Measure warm water—(previously boiled) —sprinkle Lactogen on top
3. Whisk with fork until all powder dissolved
4. Pour at once into feeding bottle

NESTLÉ'S

LACTOGEN

THE BETTER MILK FOR BABIES

Write for literature to:

NESTLÉ'S PRODUCTS (INDIA) LTD.

P. O. BOX 315 BOMBAY • P. O. BOX 396 CALCUTTA • P. O. BOX 180 MADRAS

GNL/9

vitamin B complex

TOTALIN-B

PARENTERAL AND ORAL

A palatable combination of all factors comprising Vitamin B Complex. The high potency of each individual factor is wholly maintained in a well-balanced form avoiding excess of any one factor.

TOTALIN B is ideal for administration in all Vitamin B deficiency diseases even where clinical deficiency of only one or other factor is evident.

For prompt response in most cases TOTALIN B parenteral is advised. In prolonged therapy and especially in the treatment of children SYRUP TOTALIN B proves most acceptable and efficacious.

COMPOSITION OF SYRUP TOTALIN B

Thiamin Hydrochloride	12 mg
Riboflavine	8 mg.
Pyridoxine Hydrochloride	2 mg.
Calcium Pantothenate	8 mg.
Niacinamide	50 mg
Sodium Glycerophosphate	300 mg.
Syrup and flavouring agents ...	q. s.

Cipla

BOMBAY, 8.

SAMPLES AND LITERATURE ON REQUEST.

"CIPLA Sales Depot, P 33, Ganesh Ch. Avenue, Calcutta—12"

Where amoebiasis is endemic

trade mark 'EMBEQUIN' brand
diiodohydroxyquinoline

is indicated

Diiodohydroxyquinoline is characterized by high protozoacidal activity accompanied by comparative freedom from side effects.

Intended for the treatment of all stages of amœbiasis, 'Embequin' is primarily employed in subacute or chronic cases either alone or in association with other amoebicidal drugs.

It has been used with success in patients who have developed resistance to oral arsenicals, and is reported to replace adequately the inconvenient chiniofon enemata in the adjuvant treatment of acute cases.

Supplied in containers of
20 x 0.30 gramme tablets

manufactured by
MAY & BAKER LTD
distributors
MAY & BAKER (INDIA) LTD. BOMBAY • CALCUTTA • NEW DELHI • LUCKNOW • MADRAS

388

Entero-Quinol

IODOCHLOROXYQUINOLINE

ENTERO-QUINOL is a specific therapeutic agent for the treatment of acute and chronic amoebic dysentery and is highly effective in Bacillary dysentery, Infectious Intestinal Catarrh, Colitis and Summer diarrhoea.

EAST INDIA PHARMACEUTICAL WORKS LTD. CALCUTTA

Myostibin

MYOSTIBIN is the sterile aqueous solution of Antimony Hexosate containing pentavalent antimony. It is the least toxic antimony compound for safe and rapid treatment of FILARIASIS and of Kala-azar—for both intravenous and intra-muscular use.

Journal of the
Indian Medical Association

Vol. XX, No. 7 CALCUTTA April, 1951

A STUDY ON OBSTETRIC SHOCK

Its Aetiology and Mechanism

CHUNILAL MUKHERJEE,

Department of Obstetrics and Gynæcology, Nil Ratan Sarkar Hospital, Calcutta.

AND

SAROJ KUMAR DEY,

Eden Hospital for Women, Calcutta.

Obstetric shock occupies an important place among the causes of death during pregnancy and child-birth. From the report of the Departmental Committee on Maternal Mortality and Morbidity (England and Wales) (1932), it appears that obstetric shock alone is responsible for 10·4 per cent of all maternal deaths. It is however, difficult to judge the actual incidence of shock in obstetrics, as the hospital reports do not usually record cases of minor degree. Moreover, hæmorrhage, which is always present in varying amount in all cases of child-birth, creates an additional complication. Differentiation between pure shock and pure hæmorrhage may be easy on a text-book basis, but when shock is superadded on hæmorrhage the isolation of one from the other becomes an extremely difficult matter at the bed-side, and is not always practicable, especially when the patient's condition rapidly deteriorates and immediate treatment is called for.

The Registrar General's Report in Great Britain for 1945 indicates that when hæmorrhage is included with shock, nearly 50 per cent of all maternal deaths are due to these conditions. Clinical reports of the Queen Charlotte's Hospital for the two years 1938 and 1939 show that 7 out of 22 deaths were due to shock and exsanguination. Two out of 15 deaths at the Liverpool Maternity Hospital during 1941 and 1942 came into these groups. The corresponding figures for the National Maternity Hospital, Dublin, for the year 1945 to 1947 were 4 out of 25 deaths. During the three years 1944 to 1946, 33 out of 126 deaths at the Glasgow Royal Maternity and Women's Hospital fell into this category.

Incidence and Gross Mortality

A careful scrutiny of the records of the Eden Hospital, Calcutta, was made in order to study the occurrence, ætiology, and behaviour of obstetric shock. The period under investigation was ten years, from 1936 to 1945. During this period, out of 36,412 obstetric admissions, 575 developed shock with or without hæmorrhage, before, during or soon after labour. This gives an incidence of 15·8 per thousand admissions. During the same period 31,300 patients were confined, which gives an incidence of 18·3 per thousand confinements. The available figures for The Glasgow Royal Maternity and Women's Hospital show the frequency as 14·5 per thousand confinements. A hospital as a rule sieves out difficult and complicated cases, among whom the frequency of shock is naturally high. The actual incidence of shock on population basis would thus be less than the figures stated above.

The mortality from obstetric shock in the series presented here was 198, a death rate of 34·4 per cent. No apology for the high fatality is offered, because 435 in the series were emergency admissions, who never received any antenatal care. Again, in this group, 263 patients were admitted with some degree of shock, and 91 were in a moribund state. In only 140 cases out of the whole series was the labour supervised from the beginning, and of these only 34 were booked cases. An analysis of the mortality in these three groups of cases will reveal the importance of efficient antenatal and intranatal supervision in reducing the mortality from obstetric shock. The results are tabulated in Table I.

Table I

	No. of Cases	*Per cent*	*No. of Deaths*	*Per cent*	*Per cent of total Deaths*
Emergency ..	435	75·7	170	39·0	85·8
Unbooked ..	106	18·4	26	24·5	13·1
Booked ..	34	6·0	2	5·9	1·0
Total ..	575	100·1	198	34·4	99·9

It is evident that although the total mortality in this series was 34·4 per cent yet 86 per cent of this mortality was among emergency admissions. As against this among the booked cases the death rate was only 1 per cent. Among the cases who received intranatal care only, it was 13·1 per cent.

Aetiology

Miles Phillips (1931) summarised the causes of obstetric shock as:—(1) Bodily fatigue from prolonged muscular exertion, (2) Cold from exposure, (3) Deprivation of food and water, (4) Sweating, (5) Hæmorrhage, (6) Anæsthetics, (7) Toxæmias of pregnancy,

(8) Infection, (9) Emotion. In a warm climate like that of India, cold from exposure would seldom have an ætiological significance. On the other hand, excessive sweating, especially if the chloride loss is not replenished, often predisposes to shock. The part shared by malnutrition and starvation is well known; but more than ever before, it was clearly demonstrated in the cases seen during the Bengal Famine. From the collected figures of four Calcutta hospitals during that period, it appears that out of 1283 cases belonging to famine-stricken area, 53 developed moderate or severe shock. This represents an incidence of 41 per thousand obstetric admissions, which is about three times the incidence quoted above. During the last war at the time of the civilian exodus from Burmah, the writer (C.M.) had the opportunity of personally attending 141 pregnant women, who were undernourished and debilitated due to partial starvation and prolonged journey on foot, without adequate rest. Out of these 78 went into labour or abortion, and 7 developed shock of a degree severe enough to need repeated transfusions. The incidence in this series was, therefore, 49·7 per thousand. Of course, the emotional factor of anxiety and fear was present in these cases and probably played not an insignificant role.

It is not easy to classify all cases of shock into the groups suggested by Phillips, for in most instances more than one factor is present. Of all the ætiological conditions the most constant is hæmorrhage, but the capacity to withstand the effects of hæmorrhage varies in different individuals. One patient may sustain without ill effect a postpartum hæmorrhage which would be sufficient to cause shock in another, especially in presence of predisposing factors. In a study of third stage bleeding in a series of 235 cases the writer (C.M.) came across 4 cases of shock. One of them lost as little as 160 c.c., two less than 300 c.c., and only one more than 600 c.c. The importance of postpartum hæmorrhage in obstetric shock has been ably stressed in recent years by Plass (1942).

Another important factor, which is hard to measure in individual cases is what has been named by Phillips as emotion. Modern civilisation, with its manifold influences, causes a modern woman to face labour with a feeling of anxiety and apprehension. These in their turn upset the equilibrium of the autonomic nervous system, and prepare the way for shock. It was repeatedly observed in our cases that in the presence of similar exciting conditions obstetric shock was appreciably more frequent in women belonging to the upper grades of society in spite of their better state of nutrition.

A factor which seems to have acquired quite an important place in the ætiology of shock is anæsthesia. The use of anæsthetics in labour has in recent years become almost a universal practice. To what extent properly administered anæsthesia would cause shock in an otherwise uncomplicated labour is difficult to assess. However, there seems to be little doubt that repeated and prolonged use of general anæsthetics, especially chloroform, and ether, predisposes to shock. Statistical analysis in this direction is difficult, but the following table compiled from a small series of personally supervised cases, clearly shows the danger of using chloroform and ether on subjects likely to develop shock (Table II).

TABLE II

Period—4 years—1943 to 1946

Nature of Cases	*No. of Cases*	*No. of Cases of Shock*	*Per cent*
Spontaneous Delivery without Anæsthesia	1,871	0	—
Spontaneous Delivery under Gas, or Gas and Oxygen ..	856	0	—
Spontaneous Delivery under Chloroform and/or Ether ..	134	1	0·74
Forceps Delivery under			
(i) Gas and Oxygen ..	41	1	2·4
(ii) Chloroform and/or Ether	49	2	4·1
(iii) Local Anæsthesia ..	36	0	—
Craniotomy under			
(i) Gas and Oxygen ..	5	0	—
(ii) Chloroform and/or Ether	7	3	42·8
Decapitation under			
(i) Chloroform and/or Ether	4	1	25·0
(ii) Gas; Oxygen and Ether	4	0	—
Cæsarian Section under			
(i) Local Anæsthesia ..	37	0	—
(ii) Spinal Anæsthesia ..	8	0	—
(iii) Gas and Oxygen ..	19	0	—
(iv) Chloroform and Ether ..	29	4	13·8
Internal Version under			
(i) Gas, Oxygen and Ether	10	0	—
(ii) Chloroform and/or Ether	12	1	8·3

The small series of cases presented above cannot claim to be representative, but it shows clearly that no matter what the nature of the operation is, the use of chloroform and/or ether is attended with a distinctly increased risk of shock. Twelve out of 13 cases of shock in this series was associated with the use of these anæsthetics.

It is, however, obvious that more than one ætiological factor is present in most cases, though it is customary to regard the most important of them as the ætiological agent in any particular case. The obstetric complications observed, and believed to be principally responsible for shock in our series of cases are summarised in Table III.

TABLE III

	Cause	*No. of Cases*	*Percentage*
1.	Post-Partum Hæmorrhage ..	149	25·91
2.	Retained Placenta	127	22·08
	With Hæmorrhage ..	104	89·76
	Without Hæmorrhage ..	23	10·24
3.	Antepartum Hæmorrhage ..	74	12·87
4.	Prolonged Labour	21	3·65
5.	Rupture of the Uterus ..	4	0·70
6.	Other Obstetric Trauma ..	12	2·08
7.	Inversion of the Uterus ..	4	0·70
8.	Anæmia, Under-nutrition and Debility	34	5·91
9.	Toxæmia of Pregnancy ..	47	8·20
10.	Dehydartion	7	1·21
11.	Obstetric Operations	96	16·70
	Forceps	11	11·40
	Craniotomy	26	27·12
	Decapitation	12	12·51
	Manual Removal of Placenta ..	41	42·71
	Cæsarian Section ..	4	4·16
	Breech Extraction ..	2	2·08

It will be seen from the analysis, that (*a*) The third stage alone was responsible for 48 per cent of all cases of obstetric shock encountered in this series, (*b*) Obstetric hæmorrhage as a single item was the cause of shock in 56·9 per cent of cases, (*c*) Retained placenta accounted for slightly less than a quarter of the total. Obviously, the associated hæmorrhage was an important factor in nearly 90 per cent of retained placenta. An attempt was made to ascertain to what extent Crede's manœuvre can produce shock. Of the 23 cases of uncomplicated retained placenta, a history of Crede's expression was found in 18, and in 15 of them, the operation was repeated more than once. It was not possible to establish any time relationship between the operation and the onset of shock. If manual removal of placenta is added to the cases of retained placenta, the two together almost approach the figure due to obstetric hæmorrhage. Over 8 per cent of the cases of obstetric shock were caused by toxæmias of pregnancy, not including accidental hæmorrhage. It was of interest to note that the higher the initial blood pressure was (especially the disastolic pressure) the greater was the liability to shock. Plass (1942) rightly points out that "the susceptibility of severely toxæmic and eclamptic patients to shock is not yet fully appreciated despite its obvious importance." It is interesting to note that 1 per cent of cases of obstetric shock was due to dehydration. The importance of this completely preventable condition is considerable in tropical and sub-tropical countries, and even in temperate climates excessive sweating can result in a dangerous degree of dehydration. Uterine inversion and rupture has long been recognised as important causes of obstetric shock. 1·4 per cent in this series was caused by these two conditions. But analysis shows that shock followed inversion of the uterus in all cases, and rupture of the uterus in 57·1 per cent. Considering the rarity of these two conditions the figures assume considerable significance.

Time of Onset

The time of onset of shock has an important bearing on its mode of occurrence, as will be referred to later. This point was investigated as far as possible in the present series, but unfortunately the necessary details had not been recorded in every case. In 477 cases it was found that, in 114 (23·9 per cent) shock was immediate, and developed in less than fifteen minutes of the existing stimulus. Shock appearing an hour or more after the incident responsible for it, was found in only 14·7 per cent of cases. The details are given in Table IV.

Table IV

Time of Onset	*No. of Cases*	*Percentage*
15 minutes or less	114	23·9
15 minutes to half-hour	197	41·3
Half to one hour	96	20·1
More than one hour	70	14·7
Total	477	100·0
Unspecified	98	17·0

Duration and Outcome

Shock is a condition of depleted circulation. If the state of shock persists for a considerable time the vital organs of the body suffer the effects of such depletion, and irreversible changes often set in. This was observed in the heart by Sheehan (1937), in the form of subendocardial hæmorrhages over the conducting system of the heart. The part played by shock in inducing renal and hepatic failure is only recently being recognised. The duration and outcome of shock in our series of cases are presented in Table V.

Table V

Duration	*No. of Cases*	*Per cent*	*No. of Deaths*	*Per cent*
0 to 1 hour ..	19	3·3	0	—
1 to 4 hours ..	104	18·2	12	11·5
4 to 8 hours ..	158	27·5	42	26·6
8 to 12 hours ..	151	26·3	58	38·4
12 to 24 hours ..	83	14·4	41	49·4
More than 24 hours ..	60	10·4	45	75·0
Total	575	100·1	198	34·4

In a little over half of the total number of cases the state of shock persisted for 4 to 12 hours, while in almost a quarter the duration was 12 to 24 hours, or more. The mortality, however, increased progressively as the duration of shock grew longer. Thus, where shock lasted for 4 hours or less, the mortality was just a little over one in ten; with shock persisting for 12 to 24 hours it was approximately 1 in 2; while with more than 24 hours of shock, 3 out of 4 patients died.

Death in all cases was, however, not due directly to the acute circulatory failure, but was brought about by irreversible changes in vital organs, which occurred as a result of a state of long-continued depleted circulation. In order to study this, all the deaths have been grouped into two categories, immediate and delayed. Under immediate death are included those cases where death took place during the state of shock due primarily to acute circulatory failure. Delayed death includes all cases where there was a period of apparent recovery or improvement from shock before the fatal outcome ensued. In these cases the terminal circulatory failure was a secondary phenomenon, due primarily to an upset in the normal metabolism caused by the uncompensated functional impairment of one of the vital organs of the body.

Table VI

Duration of Shock	*Deaths*				
	Immediate	Per cent	Delayed	Per cent	Total
0 to 1 hour ..	0	—	0	—	—
1 to 4 hours ..	12	6·1	0	—	12
4 to 8 hours ..	42	21·2	0	—	42
8 to 12 hours ..	51	25·7	7	3·5	58
12 to 24 hours ..	22	11·1	19	9·6	41
More than 24 hrs. ..	11	5·5	34	17·2	45
Total ..	138	69·6	60	30·3	198

It will be seen from Table VI that if shock was of short duration, the patient either died within a

short space of time or made a complete recovery. But with the state of shock persisting for more than 12 hours, about 62 per cent of the deaths were delayed. Over 30 per cent of the mortality in the whole series belonged to this group. In the death registers such cases are usually recorded as uræmia, cholæmia, puerperal insanity, etc., and the basic underlying condition is often overlooked or at any rate is not mentioned. Delayed death from obstetric shock is a matter of considerable importance, and deserves more careful study. Detailed autopsy reports in most of these cases were not available, but the clinical history and such post-mortem reports as are available indicate that the organs which bear the brunt of prolonged and severe shock are the kidneys, the liver, and the brain. Of the 60 cases of delayed death in our series, the ultimate causes of death were:—

Respiratory infection and pneumonia	2	3·3 per cent.
Progressive renal failure and uræmia	44	73·3 „
Jaundice, vomiting, and hepatic failure ..	11	18·3 „
Cerebral softening and coma	2	3·3 „
Pulmonary embolism ..	1	1·7 „

The period of survival in the case of delayed death varied from 4 to 29 days. Two deaths from pulmonary infection took place on the fifth and eighth day respectively. The death from pulmonary embolism was on the eleventh day after recovery from shock. The average interval between revival from shock and death from renal failure was 9·7 days, S. D. 2·4, and that for the hepatic failure group was 16·1 days, S. D. 3·6. The two deaths from cerebral softening, mental confusion, and coma occurred on the twenty-second and twenty-ninth days after apparent recovery.

Surgical Shock and Obstetric Shock

It is difficult to believe that the reaction of the human organism to noxious influences which manifest itself as the syndrome of shock should be different in surgical and obstetric practice. The principal difference lies in the fact, that while blood-loss may not be an inevitable feature in surgical shock, a certain amount of hæmorrhage (it may be only slight) forms an unfailing back-ground in every case of shock in obstetrics. How much this hæmorrhage is by itself responsible in any particular case is difficult to ascertain. Certainly, in some cases it might appear to be a factor of a comparatively minor importance. But what is not known about these patients is the extent to which the resistance of the organism has been lowered by the hæmorrhage, even although the amount of blood lost has been too small to produce any obvious ill-effect.

Nature compensates for this inevitable blood loss by increasing the blood volume during pregnancy. But this compensation is not wholly adequate, as the hypervolæmia does not affect the corpuscles and plasma alike. This is shown by the hæmodilution, or "physiological anæmia" of gestation.

Most earlier workers on shock sought to find a common explanation for all cases, while most modern observers have devoted considerable attention to finding evidence in support of the one or the other of the earlier theories. The neurogenic theory of Crile (1899) supported by Lockhart Mummery (1905) gave place to the toxic theory of Dale (1933) and co-workers (1919) supported by the outstanding work of Cannon and Bayliss (1919) and Cannon (1923). But in recent years O'Saughnessy and Slome (1935) have shown the importance of harmful nervous stimuli and intact nervous pathways in the production of shock, and still more recently Moon (1944) (1942) demonstrated that the shock producing property was not peculiar to the supposed tissue toxin, histamine, but was also shared by other substances, *e.g.*, bacterial toxins, peptones, snake venom, etc. In fact, Moon produced shock by instilling minced fresh liver into the peritoneal cavity of experimental animals. At a still later date Green (1943), and Bielschowsky and Green (1943) discovered that the toxic shock producing agent was of muscle origin, named it M.S.F. and identified it with adenosine triphosphate. A year later Westerfeld *et al* (1944) declared that the depressor substance was callicrain.

The position of surgical shock is thus confusing enough, and when it comes to the application of these theories to obstetric shock, the difficulty which faces one at the outset is the widely varying nature of influences which brings about this condition, while some amount of hæmorrhage forms a constant back-ground in every case. However, instances of similar organismal reactions to markedly dissimilar stimuli are not uncommon. The shock-syndrome is after all a body reaction to certain noxious impulses. The response is at first of a protective nature. This was pointed out by McDowall in the Arris and Gale lecture (1933) by stating that the onset of shock was "precluded by a compensated or even over-compensated stage in which the body succeeds in maintaining the blood pressure against the forces which would cause it fall". Zachary Cope (1933) also made a similar observation. Many cases recover at this stage and escape being noted as instances of shock, but in others the protective mechanism and the compensation break down resulting in the appearance of the clinical symptoms of shock. Thus, it is only after the failure of the initial protective stage that the symptom-complex of obstetric shock develops in what initially appeared to be widely varying and dissimilar cases.

In obstetric shock, unlike surgical shock, trauma is a factor of only a limited significance and is operative in a small group of cases. The actual exciting factor often varies in different instances, and in the majority, several factors overlap and contribute to the ætiology. This outlook was summarised by Dunphy (1944) in his classification of shock into neurogenic, vasogenic, and hæmatogenic varieties.

To start with, a modern woman approaches labour with a mental factor of anxiety and strain, then follows a period of severe muscular exertion, continuing in most cases for the best part of 24 hours, or even more, accompanied with some amount of inevitable trauma and bleeding. On close study, every case of obstetric shock would, thus appear to be a combination of all the factors, the predominant one only varying in different patients. To look for a toxic factor in a patient where shock developed during accouchement force, or Crede's expression of placenta, would be as foolish as to search for a nervous influence alone in a case of post-partum hæmorrhage, failed forceps, or shock occurring in hypertensive toxæmia.

Severe nervous stimulation, or noxious impulses, are set up by accouchement forcé, manual removal of placenta through a cervix which has contracted down, forcible internal version, extraction of the fœtus through a non-dilated cervix, Crede's expression, and acute inversion of the uterus. These manipulations give rise to shock often before the operation is over. In such a case the fall in the arterial pressure could not be attended with the absorption of a toxic substance from the muscle, nor is it possible that in such a short space of time extensive capillary damage could occur to cause severe circulatory depletion due to plasma diffusion into the tissues (Blalock 1933, 1934). These cases have evidently the nocifensor impulses as the primary cause. It is natural that psychic influences and extreme fright and pain considerably aggravate this kind of shock. It may be mentioned in passing that Pheimister *et al* (1944) believed that such neurogenic shock was initiated by prolonged stimulation of the carotid sinus. Grantley Reid (1933) pointed out the importance of the nervous factors in obstetrics. A state of nervousness is followed by a feeling of apprehension, which on its wake brings a condition of tension. This causes spasm and delay in the dilatation of passages and increases the resistance of the pelvic floor. The result is prolonged labour, and necessity for instrumental or manual intervention. This again aggravates the state of tension, establishes the vicious cycle, and later on gives rise to vasomotor inhibition and fall of blood pressure.

Clinically cases where such severe nervous stimuli are alone responsible for shock can as a rule be differentiated from those of other origin. Immediately, often within a few minutes, a marked pallor appears, accompanied by sweating. If the patient is not under anæsthesia, yawning or sighing indicating increased carbon-dioxide tension in the blood, is a frequent feature. The pulse, for the first few minutes is slow, feeble and of a low tension. As the condition deteriorates the rate increases and the volume becomes poor. There are two ways in which such neurogenic obstetric shock may terminate. If treatment is instituted early recovery promptly occurs. If, however, the first few minutes are lost, the decompensated stage sets in, from which recovery is difficult and sometimes impossible. It naturally follows that obstetric shock of this nature is best eliminated by preventing the offending stimuli from reaching the central nervous system and causing vasomotor inhibition. Here is the utility of judicious obstetric analgesia and anæsthesia.

All cases of shock met with in obstetrics are not necessarily caused by severe nervous stimulation. A case of severe obstetric trauma, the condition developing after uterine exhaustion, tonic uterine contraction, and other forms of dystocia, or retention of placenta unattended with hæmorrhage cannot be wholly explained on the assumption of a neurogenic factor. Tissue trauma is undoubtedly responsible to a major degree in these cases. It is possible that a toxic substance is absorbed from the traumatised focus and causes the symptoms, although the existence of such a substance in the traumatised pelvic focus has not yet been demonstrated. It matters little to a clinician as to whether the toxic substance is histamine M.S.F. or callicrain, or products of "myogenous acidæmia", as suggested by Wright and Colebrook (1918), and supported by Munro Kerr (1937) on the basis of an observation by Anderson (1934) who found increasing ketosis with prolongation of labour.

The shock in these cases is comparatively late in appearance. The clinical manifestations seldom become evident before half to one hour after the infliction of the trauma, which is akin to experimental shock induced with depressor substances. The onset is insidious, and characterised by a gradual increase in the pulse rate and a progressive fall of blood pressure. If not anticipated the condition may not be noticed until the picture is fully established. Without entering into the dispute as to the exact nature of the toxin one could assume that the clinical symptoms are due to capillary dilatation, plasma diffusion, hæmoconcentration and fall in the effective circulatory volume. Hæmatocrit studies, to be referred to later, confirm this assumption, and bring it in a line with traumatic surgical shock.

Blalock (1933, 1934) demonstrated that plasma diffusion responsible for the hæmoconcentration occurs in and around the site of trauma. This has been shown to occur in surgical shock caused by burns and in the crush syndrome (Bywaters, 1942), but proof of a similar condition in obstetric shock following severe pelvic trauma has not yet been offered. Investigation in this direction is beset with practical difficulties. The writer studied a small series of cases of obstetric shock with severe pelvic injury with a view to find out if there was any increase in the weight of the pelvic and paravaginal cellular tissues due to diffusion of plasma into them. The principal difficulty was in the direction of securing adequate controls. Taking the average figures for normal full-term pregnancy as the unit (4 cases—death from intercurrent disease), the gain in weight of the pelvic and paravaginal cellular tissue was:—

In normal labour (6 cases) ..	10·4 p.c. S.D. 4·1
In hæmorrhagic obstetric shock (3 cases)	14·9 p.c. S.D. 6·2
In obstetric shock due to pelvic injury (6 cases) ..	30·7 p.c. S.D. 8·7

These figures are statistically significant, but it will be noticed that even uncomplicated normal labour was attended with a slight diffusion of fluid into the pelvic cellular tissue. Death from hæmorrhagic shock, in the

terminal stage of which damage to the capillary bed in general from anoxæmia would be an expected event, revealed a still more marked loss of plasma fluid into the pelvic cellular space. Traumatic obstetric shock, however, where the damaging lesions were confined to the pelvis, showed that as much as three times the fluid as in normal labour was lost from the plasma into the pelvic tissue spaces. These findings however, require confirmation in a larger series.

It has been pointed out that shock in obstetrics is different from most cases of surgical shock by the inevitable presence of hæmorrhage. Moon (1942) made an elaborate differentiation between shock and hæmorrhage. From the practical point of view of an obstetrician this is of little importance, for as Harkins (1941) pointed out "in clinical cases usually whole blood and plasma are lost, after all it matters little what colour fluid is lost from the blood stream—red or yellow." In simple hæmorrhage *e.g.*, placenta prævia, abortion and post-partum hæmorrhage both corpuscular and fluid elements are lost from the blood stream. In early stages Nature compensates for this loss by absorption of tissue fluid and restores the circulatory volume. When compensation fails the oxygen carrying capacity of blood suffers. This is followed by tissue anoxæmia, capillary dilatation, plasma diffusion and hæmoconcentration.

Most cases of shock in obstetrics are attended with blood loss, and so the underlying hæmatogenic factor is only too frequently present. It is difficult to assess the exact role of this hæmorrhage in deciding the severity of the state of shock. In many cases the bleeding merely lowers the resistance of the patient against the offending influences which produce shock, in others the blood loss acts as the final contributory factor. The end result in either case is the same. Not infrequently in obstetrics such summation of sub-threshold stimuli forms the background for shock. For example, a moderately undernourished patient goes through a slightly prolonged labour, is helped with low forceps under general anæsthesia, sustains a trifling perineal laceration, suffers a small postpartum hæmorrhage and then drifts into a state of severe shock. A history like this is not unusual. If such cases are carefully scrutinised it is found that individually none of the factors present can possibly explain the intensity of shock, but taken collectively they are sufficient to produce this result.

No matter how shock is produced, in neglected cases a decompensated state ultimately develops, and the vicious cycle is completed. As to how long the condition of depleted circulation must persist before compensation finally breaks down depends on the underlying cause, the extent to which the effective circulatory volume suffers, and the time of commencement and the nature of treatment adopted. The reduction in the effective circulatory volume may by itself be responsible for the fatal outcome. Yet, in most cases Nature tries to maintain the vital circulation by producing intense vaso-constriction at all the available sites in the body. Trueta *et al* (1947) demonstrated the effects of such vasoconstriction on the renal vessels. There is reason to believe that similar changes affect the vessels of other important organs, *e.g.*, the liver, heart, suprarenal and pituitary. Subendocardial hæmorrhages, described by Sheehan (1937) as constituting a characteristic feature of obstetric shock appear to be due to changes affecting the coronary vessels. The delayed deaths referred to in the preceding section are apparently connected with the effects of the vascular changes in decompensated shock.

Hæmatocrit Studies in Obstetric Shock

Hæmatocrit studies were made in a series of 25 cases of obstetric shock personally studied by one of the authors (C.L.), with a view to ascertain any relationship which might exist between the packed cell-volume and the underlying conditions present. The results appear to fall into four distinct categories, and are analysed below. In all cases the specimen of blood was obtained at the earliest clinical evidence of shock, and before any treatment was given.

Group I. No. of cases, 4. Shock unattended with any more than normal blood loss; no traumatic lesions (neurogenic). Hæmatocrit, (per cent) 32·6; 32·0; 30·2; 31·8.
Average 31·65; S.D. 0·70.

Group II. No. of cases, 7. Shock attended with marked traumatic lesions; hæmorrhage not more than normal (traumatic). Hæmatocrit, (per cent) 52·4; 54·6; 59·2; 47·2; 60·4; 58·2; 54·0.
Average 55·1; S.D. 2·99.

Group III. No. of cases, 12. Shock attended with hæmorrhage; no other factor present (hæmorrhagic). Hæmatocrit, (per cent) 30·3; 26·7; 22·2; 20·8; 23·2; 22·9; 18·2; 30·2; 20·2; 26·7; 27·6; 20·5.
Average 24·1; S.D. 2·82.

Group IV. No. of cases, 2. Cases with combined features of the previous groups (summation shock). Hæmatocrit, (per cent) 40·8; 42·0.
Average 41·4; S.D. 1·60.

Normal values were obtained from 25 normal healthy women at the end of spontaneous uncomplicated delivery. The average hæmatocrit reading in these cases was 32·2, S.D. 1·8. It will be seen that between Group 1 and normal cases there is no significant difference. In Group II cases the packed cell-volume increased by nearly 71 per cent. The increase in the hæmatocrit value in traumatic surgical shock has been proved beyond dispute in recent years. It will be seen that a case of obstetric shock of traumatic origin shows changes akin to those seen in similar cases in surgical practice. Group III cases, where hæmorrhage was the predominant, if not the only feature, revealed evidence of considerable hæmodilution, the packed cell-volume being 25·8 per cent less than normal.

In late stages when compensation breaks down completely the initial hæmodilution in hæmorrhagic shock gives place to a progressive and marked hæmoconcentration. The same is found, though in a slightly less striking manner in neurogenic shock also, while in traumatic shock initial hæmoconcentration becomes more intense as the condition deteriorates. This was

seen in 10 cases in the series, where the stage of decompensation was reached. Of these 5 were post-hæmorrhagic shock, 3 post-traumatic, and 2 were apparently of neurogenic origin. There was hardly any difference in the hæmatocrit readings of these cases. The figures were 68·4; 67·7; 68·8; 62·6; 65·0 (Hæmatogenic). 68·8; 69·1; 67·3 (traumatic). 66·5; 67·5. The average was 67·2; S.D. 2·07. It would appear that no matter how shock was brought about, the final stages showed an exactly similar change in the hæmodynamics in all varieties. At this stage shock developing after a severe hæmorrhage behaved in no way differently from that caused by accouchement force, or delayed and obstructed labour.

Conclusion

The identification of the clinical syndrome of obstetric shock has generally been associated with the manifestations of the terminal stage of a complex process, when Nature's compensatory mechanism has broken down and a condition of circulatory depletion established. Shock, however, is the result of a stimulus or multiple stimuli of a noxious nature. It will appear from the above analysis that the mode of its production can obviously vary, depending upon the obstetric complication present or the basic state of health of the patient when this complication develops. Irrespective of its manner of production or the nature of the stimulus, a compensated or even over-compensated stage precedes the onset of the symptom-complex, designated as obstetric shock. In the early stage it is possible by careful clinical examination and hæmatocrit studies to know the mechanism involved in this process of compensation. But when this initial stage is missed and shock becomes clinically manifest in the form of progressive hypotension, tachycardia, pallor and asthenia there is little difference in the hæmodynamics, no matter how the initial change was brought about. At this stage the prominent feature is the loss or depletion of the effective circulatory volume, and consequent vascular spasm and anoxæmia. The importance of realisation of the nature of the initial process and its terminal outcome lies in the proper planning of the treatment at any particular stage of the illness.

Obstetric shock is a condition of a varied primary ætiology, but with a single terminal outcome when compensation breaks down. In order to improve upon the mortality due to this condition an obstetrician must take into account (*a*) the amount and nature of the painful stimuli caused by labour or manual interference, (*b*) the degree and severity of tissue trauma, (*c*) the amount of hæmorrhage present, and finally (*d*) the amount of reserve capacity possessed by the patient in order to be able to withstand any or all of these exciting stimuli. Any one of these factors, if severe enough to undermine the compensatory mechanism may produce the symptom complex of shock, but more often a combination of some or all of these stimuli form the background for obstetric shock. It is only in this respect that shock in obstetrics differs from that seen in surgical practice. Otherwise, there seems to be hardly any difference in the mechanism of production of shock in obstetrics and surgery.

Ordinarily when treatment for obstetric shock is commenced, compensation has already started to fail. The treatment at this stage must be urgent not only to prevent an impending death but also to avoid dangerous anoxæmia to vital parenchymatous organs, caused by the state of disturbed circulation, vascular spasm and fall of blood pressure. The importance of maintaining effective cerebral and cardiac circulation has been known for many years. The role played by the other organs, notably the liver and kidneys has only recently come to light. The changes brought about by shock in renal circulation have been demonstrated by Trueta and co-workers (1946). The recent viviperfusion experiments of Frank *et al* (1946) have shown the part played by the liver in preventing irreversibility of changes induced by shock. Our own study presented above indicates that if the state of depleted circulation is allowed to persist for 8 hours or more, although immediate fatal outcome may be avoided in many cases, yet ultimately death often ensues from the effects of functional failure of the liver and kidneys. These deaths do not often find place under obstetric shock, but are ascribed to cortical necrosis of the kidneys, hepatic failure or hepato-renal syndrome. The basic condition responsible for the final outcome unfortunately remains too far in the background. This aspect of obstetric shock deserves more consideration than it has hitherto received.

References

Anderson, D. F.—*J. Obstet. and Gyn. Brit. Emp.*, **41**:261, 1934.
Blalock, A.—*Internl. clinics* (Series 43), **1**:184, 1933.
Blalock, A.—*Surg. Gyn. Obst.*, **53**:551, 1934
Bielschowsky, M. and Green, H. N.—*Lancet*. **2**:153, 1943.
Bywaters, E. G. L.—*Brit. M. J.*, **2**:643, 1942.
Cannon, W. B.—Traumatic Shock, Appleton, New York, 1923.
Cannon, W. B. and Bayliss, W. M.—*Lancet*, **1**:256, 1919.
Crile, G. W.—An Experimental Research into Surgical Shock, Lippincott, Philadelphia, 1899.
Cope, V. Z.—*Brit. M. J.*, **2**:690, 1933.
Dale, H. H. and Laidlaw, P. P.—*J. Physiol.*, **52**:355, 1919.
Dale, H. H., Laidlaw, P. P. and Richards, A. N.—*Med. Res. Council Rept.*, No. 8, 1919.
Dale, H. H.—*Johns Hopkins Hosp. Bull.*, **53**:397, 1933.
Dunphy, J. E.—*Brit. J. Surg.*, 32, 66, 1944.
Frank, H. A., Seligman, A. M. and Fine, J.—*Jour. Clin. Invest.* **25**:22, 1946.
Green, H. N.—*Lancet*, **2**:147, 1943.
Harkins, H. N.—*Surg.*, **9**:231, 1941.
Kerr, J. M.—Operative Obstetrics, Bailliere, Tindall and Cox, London, 1937.
McDowall, R. J. S.—*Brit. M. J.*, **2**:35, 1933.
Moon, V. H.—Shock, Its Dynamics, Occurrence and Management, Lea and Febiger, Philadelphia, 1942.
Moon, V. H.—*Brit. M. J.*, **1**:4353, 1944.
Mummery, J. P. L.—Hunterian Lecture, R.C.S., 1905.
O'Saughnessy and Slome, L.—*Brit. J. Surg.*, **22**:589, 1935.
Pheimister, D. B., Laester, C. H., Eichelberger, L. and Schachter, R. J.—*Ann. Surg.* **119**:26, 1944.
Phillips, M. H.—*Brit. M. J.*, **1**:833, 1931.
Plass, E. D.—*West. J. Surg.*, **50**:396, 1942.
Reid, G. D.—Natural Child-birth. Heinneman, London, 1933.
Sheehan, H. L.—*J. Path. & Bact.*, **45**:189, 1937.
Trueta, J., Barclay, A. E., Franklin, K. J., Daniel, P. M., and Pritchard, M. M. L.—Studies on Renal Circulation, Blackwell, Oxford. 1947.
Westerfeld, W. W., Weisiger, J. R., Ferris, B. G. and Hastings, A. B.—*Am. J. Physiol.*, **142**:519, 1944.
Wright, A. and Colebrook, L.—*Lancet*, **1**:763, 1918.

AGGLUTINATION REACTION IN DIAGNOSIS OF ENTERIC INFECTIONS

BALBIR SINGH,

Bacteriologist, Irwin Hospital, New Delhi.

Formerly, Pathologist, Tata Main Hospital, Jamshedpur.

Agglutination reaction or the Widal test is one of the most important tests on which a clinician depends for diagnosing enteric infections after the first week of pyrexia. But it is unfortunate that there is no arbitrary limit of titre at which a case can be diagnosed as suffering from enteric fever. In fact, the results of Widal tests of any patient can be interpreted only in the light of information about the level of natural agglutinins for the typhoid-paratyphoid group of organisms in the population of a particular country from which an individual comes, the duration of illness and whether he had T.A.B. inoculation or not. With a view to determine the titres of the agglutinins which could be considered significant or diagnostic at Jamshedpur, the level of natural agglutinins was determined in a random sample of the population and Widal tests were performed in cases suffering from enteric or non-enteric infections in the medical wards of the Tata Main Hospital. Results of this investigation were as reported below.

Natural Agglutinins in Jamshedpur

Frequency distribution of natural agglutinins for the typhoid-paratyphoid group of organisms in a random sample of the population of Jamshedpur.

Material: The frequency and concentration of H (flagellar) and O (somatic) agglutinins for the typhoid-paratyphoid group of organisms were determined in 251 sera received for the Wassermann reaction and Kahn tests from the venereal outpatients. Sera that showed positive W. R. and or Kahn tests or from T.A.B. inoculated individuals or from those who had a recent history of continuous fever were not included in this survey.

Technique used in determining the titres: Each serum was put up in four dilutions from 1 in 25 to 1 in 250 and was tested against H and O type of suspensions.* The serum suspension mixtures were made in test tubes 2" by ½" and were incubated in a water bath at 55° C for two hours. Racks containing the tubes were kept overnight at room temperature and the results were read next morning with the aid of a concave mirror of a microscope. When any serum showed agglutinins upto 1 in 250 dilution, the test was repeated with higher dilutions to determine the end titre.

Findings of this survey were as shown in Tables I-IV.

In the following tables are shown the frequency and concentration of agglutinins for the typhoid group of organisms in 251 sera received for the W. R. and Kahn tests from outpatients department and in 665 sera of uninoculated individuals suffering from cases other than enteric fever.

Upper respiratory catarrhal conditions included 42 cases of acute bronchitis, 17 cases of acute pharyngitis

Table I—Showing Frequency and Concentration of Agglutinins for *Salmonella typhi*

	No. of sera or the number of cases examined.	Percentages of sera showing agglutinins for TO upto the titres specified below				No. of sera or the number of cases examined.	Percentages of sera showing agglutinins for TH upto the titres specified below				
		1:25	1:50	1:125	1:250		1:25	1:50	1:125	1:250	1:500
Sera received for W.R. and Kahn tests (a random sample of the population) ..	251	22·3	14·3	2·7	1·1	231	6·9	3·0	0·4	N	N
Upper respiratory catarrhal conditions ..	82	19·5	17·1	2·4	N	85	16·4	17·6	1·1	N	N
Pneumonia ..	64	26·5	9·3	1·5	N	67	11·9	11·9	N	N	N
Malaria	52	19·2	15·3	1·9	N	59	10·1	22·0	1·6	N	N
Tuberculosis ..	19	15·7	16·7	N	N	19	21·1	10·5	15·2	N	N
Amoebic hepatitis and other diseases of the liver	17	17·6	17·6	5·8	N	19	10·5	21·0	N	N	N
Miscellaneous medical diseases	36	25·0	8·3	8·3	N	36	16·6	16·6	5·5	N	N
Pyrexia of unknown origin (P.U.O.) ..	162	25·9	16·0	1·8	N	162	11·7	20·0	4·9	0·6	N
Typhus fever ..	233	24·4	21·8	4·7	0·8	294	16·2	20·9	9·8	3·7	0·3

TO=O agglutinins of Salm. typhi. TH=H agglutinins of Salm. typhi.

N=None of the sera showed agglutination in dilution under which it was mentioned.

* H type of suspensions of *Salm. typhi, Salm. paratyphi A, Salm. paratyphi B* (type) and *Salm. paratyphi C* (type) containing 8-13 millions of organisms per c.c. were obtained from the Haffkine Institute, Bombay and O type of concentrated suspensions were obtained from the Pathology Department, Armed Forces Medical College, Poona.

Familiar

to every physician are the patients who need a good tonic

To stimulate appetite, to restore vigour and general tone, NEURO PHOSPHATES ESKAY and ESKAY B_1 are two of the most useful preparations you have. These tonics are prescribed so widely because they work so well.

a palatable and effective tonic **NEURO PHOSPHATES ESKAY**

Each adult dose (2 fluid drams) contains:

Alcohol	5.0% v/v
Strychnine glycerophosphate, anhydrous	1/64 grain
Sodium glycerophosphate	2 grains
Calcium glycerophosphate	2 grains
Phosphoric acid	1.5 minims

ESKAY B_1 *the formula of famous 'Neuro Phosphates' plus Vitamin B_1*

Both tonics available in 4 and 8 fl. oz. bottles.

Smith Kline & French International Co., Philadelphia, U.S.A.

(Incorporated in U.S.A. with Limited Liability)

In India: 232 Hornby Road, Bombay 1

Branches: • Calcutta—PHARMED LTD., Mercantile Buildings 10, Lall Bazar, P. O. Box 2384, Calcutta.
• Delhi—Pharmed. • Madras—16, Broadway, G.T., Madras.

Progress in Therapy

A CONSTANT AIM of Boots' research department is to explore every possibility in drug production and place the results at the disposal of the medical profession. The following are four recent additions to the comprehensive range of Boots' Products for Modern Therapy.

1 Injection of Tetraethylammonium Bromide – Boots

For relief from pain in peripheral vascular disorders, causalgia and post-herpetic neuralgia.

2 D. F. P. – Boots (Di-isopropyl Fluorophosphonate)

Used in the treatment of glaucoma, paralytic ileus and myasthenia gravis.

3 Mustine Hydrochloride – Boots (Nitrogen Mustard Hydrochloride)

A powerful cytotoxic agent, for intravenous injection in cases of Hodgkin's disease, chronic myelogenous leukaemia and certain other malignant conditions.

4 Isoprenaline – Boots (Isopropyl-*nor*-Adrenaline)

Isopropyl-*nor*-Adrenaline sulphate, supplied in the form of tablets for sublingual administration or as a solution for inhalation, for the treatment of bronchial asthma.

Literature and further information available on request from

THE MEDICAL INFORMATION DEPARTMENT
BOOTS PURE DRUG COMPANY (INDIA) LIMITED
P. O. BOX 680 BOMBAY 1

Boots

and 18 cases of coryza. Pneumonia included 44 cases of lobar pneumonia, 8 cases of broncho-pneumonia and five cases of unresolved pneumonia. Amœbic hepatitis and other diseases of the liver included 16 cases of amœbic hepatitis. Miscellaneous medical diseases included cases of anæmia, pyelitis, cystitis, syphilis, pericarditis with effusion, heat exhaustion, meningitis, dysentery, ulcerative gingivitis, gonorrhœa, rheumatic arthritis, rheumatic fever, filarial fever and iridocyclitis. Tuberculosis included 7 cases of pulmonary tuberculosis and 7 cases of pleurisy with effusion. Typhus consisted mostly of OXK-positive cases.

TABLE II—SHOWING FREQUENCY AND CONCENTRATION OF AGGLUTININS FOR *Salmonella paratyphi A*

	No. of sera or the number of cases examined.	Percentages of sera showing agglutinins for AO upto the titres specified below			No. of sera or the number of cases examined.	Percentages of sera showing agglutinins for AH upto the titres specified below			
		1:25	1:50	1:125		1:25	1:50	1:125	1:250
Sera received for W.R. and Kahn tests (a random sample of the population) ..	225	N	0·3	N	251	2·3	1·1	N	N
Upper respiratory catarrhal conditions ..	42	N	N	2·3	74	1·3	N	1·3	N
Pneumonia	39	N	N	N	59	5·1	N	N	N
Malaria	25	N	N	N	49	4·8	6·1	N	N
Tuberculosis	9	N	N	N	16	N	N	N	N
Amoebic hepatitis and other diseases of the liver	9	N	N	N	18	5·5	N	N	N
Miscellaneous medical diseases ..	20	N	N	N	35	2·8	N	N	N
Pyrexia of unknown origin (P.U.O.) ..	85	N	N	N	148	2·0	2·0	1·3	N
Typhus fever	84	2·3	N	N	236	2·9	3·3	1·2	0·8

AO=O agglutinins of *Salm. paratyphi* A. AH=H agglutinins of *Salm. paratyphi* A
N=None of the sera showed agglutination in dilution under which it was mentioned

TABLE III—SHOWING FREQUENCY AND CONCENTRATION OF AGGLUTININS FOR *Salmonella paratyphi B*

	No. of sera or the number of cases examined.	Percentages of sera showing agglutinins for BO upto the titres specified below			No. of sera or the number of cases examined.	Percentages of sera showing agglutinins for AH upto the titres specified below			
		1:25	1:50	1:125		1:25	1:50	1:125	1:250
Sera received for W.R. and Kahn tests (a random sample of the population) ..	203	6·5	1·5	1·5	225	4·0	5·3	2·6	0·4
Upper respiratory catarrhal conditions ..	41	4·8	2·4	N	80	7·5	5·0	N	N
Pneumonia	42	4·7	4·7	N	59	6·7	11·8	1·6	N
Malaria	26	7·6	3·8	N	42	7·1	7·1	N	N
Tuberculosis	9	N	N	N	16	5·5	5·5	N	N
Amoebic hepatitis and other diseases of the liver	11	N	N	N	18	11·1	N	N	N
Miscellaneous medical diseases ..	21	N	N	N	32	3·1	6·2	3·1	N
Pyrexia of unknown origin (P.U.O.) ..	88	7·9	N	N	146	5·3	N	N	N
Typhus fever	89	7·8	4·4	N	197	4·1	10·1	3·5	0·5

BO=O agglutinins of *Salm. paratyphi* B. BH=H agglutinins of *Salm. paratyphi* B
N=None of the sera showed agglutination in dilution under which it was mentioned.

TABLE IV—SHOWING FREQUENCY AND CONCENTRATION OF AGGLUTININS FOR *Salmonella paratyphi* C

	No. of sera or the number of cases examined.	Percentages of sera showing agglutinins for CO upto the titres specified below		No. of sera or the number of cases examined.	Percentages of sera showing agglutinins for CH upto the titres specified below	
		1:25	1:50		1:25	1:50
Sera received for W.R. and Kahn tests (a random sample of the population)	251	1·1	0·3	203	5·3	0·4
Upper respiratory catarrhal conditions	35	2·8	N	52	5·7	N
Pneumonia	38	N	N	43	9·3	N
Malaria	23	4·4	N	30	16·6	N
Tuberculosis	9	N	N	14	14·2	N
Amoebic hepatitis and other diseases of the liver	12	N	N	16	N	N
Miscellaneous medical diseases	15	N	N	23	4·3	N
Pyrexia of unknown origin (P.U.O.)	61	3·2	N	111	13·5	0·9
Typhus fever	87	2·3	1·1	163	6·1	1·8

CO=O agglutinins of *Salm. paratyphi* C. CH=H agglutinins of *Salm. paratyphi* C
N=None of the sera showed agglutination in dilution under which it was mentioned.

Frequency and concentration of agglutinins for the typhoid-paratyphoid group of organisms in sera of 665 patients suffering from diseases other than enteric group of fevers.

Material: 665 patients diagnosed as suffering from medical diseases commonly met with in the medical wards of the Tata Main Hospital were tested for the titres of agglutinins for the typhoid-paratyphoid group of organisms. T.A.B. inoculated individuals or those who had a recent history of a continuous fever were excluded from this investigation.

Technique of the Widal Test: It was the same as mentioned above in determining the level of natural agglutinins in sera received for the Wassermann reactions and Kahn tests.

Findings: The results of this investigation were included in Tables I to IV to enable the readers to form an idea easily about the changes brought about by these diseases in the level of agglutinins for the typhoid-paratyphoid group of organisms. There was no significant stimulation of the O agglutinins for *Salm. typhi* in 270 cases suffering from various diseases met with commonly in the medical wards of the Tata Main Hospital. Typhus fever and pyrexia of the unknown origin (P.U.O.) were the only diseases in which increase in frequency and concentration of O agglutinins for *Salm. typhi* were observed. O agglutinins for *Salm. paratyphi A, Salm. paratyphi B* and *Salm. paratyphi C* were affected very little by disease. They were completely absent in sera of cases diagnosed as amœbic hepatitis and miscellaneous medical diseases listed under Tables I to IV. There was however slight increase in their frequency during typhus, and malaria showed increased frequency of agglutinins for *Salm. paratyphi B* and *Salm. paratyphi C* only.

H (flagellar) agglutinins for *Salm. typhi* were increased in frequency as well as concentration in medical diseases commonly met with in the medical wards. Typhus gave the maximum stimulus to the production of H agglutinins and pneumonia the least stimulus. Malaria, upper respiratory catarrhal conditions and P.U.O.'s stood in between the two extremes.

The odds in favour of the diagnosis of enteric infection in cases with suggestive clinical history.

The odds in favour of the diagnosis of enteric infection in a case with suggestive clinical history, as calculated from the number of sera showing different concentrations of H and O agglutinins for *Salm. typhi* and H agglutinins for *Salm. paratyphi A* in a random sample of the population as well as from the titres of agglutinins shown by in-patients suffering from diseases other than enteric infection, were shown in Table V. With O agglutinins for *Salm. paratyphi A*, the odds were obviously higher than for H agglutinins. The odds were not calculated for the agglutinins for *Salm. paratyphi B* and *Salm. paratyphi C* as these organisms were not isolated by hæmo-culture from any of the cases under review.

It was obvious from Tables I to IV and V that when a single Widal test was done in a case of pyrexia, titre of H and/or O agglutinins for *Salm. typhi* lower than 1 : 125 was not significant. In fact, 1 : 125 titre of H agglutinins was also not significant in Jamshedpur from the month of July to the middle of November, when the incidence of typhus was fairly high. 1 : 250 titre was significant but not diagnostic and 1 : 500 titre could be considered as almost certainly diagnostic. 1 :250 titre was however almost certainly diagnostic during the part of a year when the incidence of typhus was low.

1 : 125 titre of O agglutinins for *Salm. typhi* was of little significance all the year round whether the incidence of typhus was high or low. 1 : 250 titre was significant but not diagnostic during the rainy season when the incidence of typhus was high. It was almost certainly diagnostic during the part of a year when the incidence of typhus was low but 1 : 500 titre could be considered diagnostic all the year round.

TABLE V—SHOWING ODDS IN FAVOUR OF THE DIAGNOSIS OF ENTERIC INFECTION IN UNINOCULATED INDIVIDUALS WITH CLINICAL HISTORY SUGGESTIVE OF ENTERIC FEVER

Titre of Agglutinins	*Odds in favour of the diagnosis of enteric infections*					
	O agglutinins for *Salm. typhi*		H agglutinins for *Salm. typhi*		Agglutinins of H type for *Salm. paratyphi A*	
	Considering the incidence of typhus	*Without considering the incidence of typhus*	*Considering the incidence of typhus*	*Without considering the incidence of typhus*	*Considering the incidence of typhus*	*Without considering the incidence of typhus*
1:25 ..	4 to 1	5 to 1	8 to 1	7 to 1	36 to 1	36 to 1
1:50 ..	6 to 1	7 to 1			55 to 1	77 to 1
1:125 ..	33 to 1	40 to 1	19 to 1	37 to 1	166 to 1	344 to 1
1:250 ..	50 to 1	230 to 1	66 to 1	500 to 1	500 to 1	almost certainly diagnostic
1:500 ..	almost certainly diagnostic	diagnostic	1111 to 1	diagnostic	never seen in diseases other than enteric	never seen in diseases other than enteric.

Frequency and concentration of agglutinins for the typhoid-paratyphoid group of organisms in typhoid fever.

Material: Consisted of 42 proved cases of typhoid fever and 156 non-fatal cases of typhoid fever diagnosed on clinical and serological evidence.

Technique used in the Widal test was the same as mentioned above.

Findings: 39·48 per cent of the sera tested in the first week (actually between 5 to 7 days) showed 1: 250 or higher titre of O agglutinins for *Salm. typhi* as indicated in Table VI. Frequency as well as concentration of these agglutinins increased during the 2nd week. Concentration decreased in the 3rd week and it decreased still further in the 4th week though frequency had remained at nearly the same level as was observed in the 2nd week. 1: 5000 end titre was observed in 4·5 per cent. in the 2nd week. O agglutinins for *Salm. paratyphi A* and *Salm. paratyphi B* (type) and *Salm. paratyphi C* (type) were also increased in frequency and concentration during typhoid fever but the stimulus declined in the 4th week in most cases.

H agglutinins for *Salm. typhi* were observed in a titre of 1: 125 or higher in 56·3 per cent of the sera tested in the first week. Frequency and concentration increased steadily during the 2nd, 3rd and 4th weeks. Highest concentration showing an end titre of 1: 12500 was recorded in the 3rd week and highest frequency was observed in the 4th week when 98·4 per cent of the 28 cases examined showed H agglutinins. Proved cases did not show as much increase in frequency of H agglutinins in the sera tested in the 2nd week as was observed in the whole series, obviously, because of the associated bacteriæmia. Concentration of the agglutinins also did not rise in them higher than 1: 5000 titre and the highest level was observed in them during the 2nd week rather than in the 3rd. H agglutinins for *Salm. paratyphi A* were observed in 28·0 per cent of the 50 cases of typhoid examined in the first week of illness, though highest frequency of these agglutinins in non-enteric infections was 10·9 per cent only. Both frequency and concentration of these agglutinins came down in the 4th week unlike agglutinins for *Salm. typhi* which showed highest frequency in the 4th week. Highest titre recorded was 1: 500. This concentration was observed not only in those diagnosed on serological and clinical evidence only but in 11·1 and 5·4 per cent respectively of the proved cases also who were examined during the first and second weeks of their illness. H agglutinins for *Salm. paratyphi B* (type) were observed in 30·6 per cent of the sera collected during the first week of illness though their highest frequency in diseases other than typhoid was 20·1 per cent only. Their level fell down slightly in the 2nd week and their complete absence was recorded in the sera examined during the 4th week of illness. Highest titre recorded for these agglutinins was 1: 500. Frequency of H agglutinins for *Salm. paratyphi C* (type) was nearly the same in the sera examined during the first week of typhoid fever as was observed in a random sample of the population but it rose from 8·4 to 21·3 per cent in the second week. End titre was however, never higher than 1: 50.

TABLE VI—PERCENTAGES OF SERA SHOWING DIFFERENT TITRES OF AGGLUTININS IN 336 WIDAL TESTS OF 198 CASES* OF TYPHOID FEVER

SALMONELLA TYPHI

Sera collected during	Total No. of sera tested or the No. of cases examined.	Percentage of sera showing O agglutinins for Salm. typhi upto the titres specified below							
		1:25	1:50	1:125	1:250	1:500	1:1250	1:2500	1:5000
5-7 days of fever†	48	4·1	20·8	10·4	12·5	18·7	6·2	2·08	nil
2nd week of fever	133	6·0	12·0	12·7	21·0	16·5	6·7	3·7	4·5
3rd week of fever	83	7·2	7·2	14·4	20·4	21·6	9·6	3·6	nil
4th week of fever	25	8·0	8·0	16·0	28·0	12·0	12·0	nil	nil

Sera collected during	Total No. of sera tested or the No. of cases examined.	Percentage of sera showing H agglutinins for Salm. typhi upto the titres specified below								
		1:25	1:50	1:125	1:250	1:500	1:1250	1:2500	1:5000	1:12500
5-7 days of fever†	47	8·5	14·8	8·5	25·5	8·5	10·6	2·12	nil	nil
2nd week of fever	157	5·7	11·4	15·3	22·8	15·9	9·2	5·1	4·4	nil
3rd week of fever	104	6·7	7·6	5·7	21·1	24·0	11·4	10·5	2·8	0·9
4th week of fever	28	nil	10·7	3·5	14·2	21·0	21·0	24·5	3·5	nil

SALMONELLA PARATYPHI A

Sera collected during	Total No. of sera tested or the No. of cases examined.	Percentages of sera showing H agglutinins for Salm. paratyphi A upto the titres specified below.					Total No. of sera tested or the No. of cases examined.	Percentages of sera showing O agglutinins for Salm. paratyphi A upto the titres specified below			
		1:25	1:50	1:125	1:250	1:500		1:25	1:50	1:125	1:250
5-7 days of fever†	50	12·0	6·0	4·0	2·0	4·0	30	10·0	nil	nil	nil
2nd week of fever	104	10·5	7·5	5·7	0·9	2·8	60	6·6	3·3	1·6	nil
3rd week of fever	64	15·6	10·9	6·2	nil	1·5	35	8·5	11·4	2·8	nil
4th week of fever	24	4·1	8·3	4·1	4·1	nil	16	6·2	nil	nil	nil

SALMONELLA PARATYPHI B

Sera collected during	Total No. of sera tested or the No. of cases examined.	Percentages of sera showing O agglutinins for Salm. paratyphi B upto the titres specified below.				Total No. of sera tested or the No. of cases examined.	Percentages of sera showing H agglutinins for Salm. paratyphi B upto the titres specified below.			
		1:25	1:50	1:125	1:250		1:25	1:50	1:125	1:250
5-7 days of fever†	35	22·8	8·5	2·8	nil	39	2·5	20·5	2·5	5·1	nil
2nd week of fever	75	13·3	17·5	5·3	nil	116	7·9	12·9	nil	3·4	nil
3rd week of fever	29	6·8	20·6	6·8	3·4	40	7·5	7·2	2·5	5·0	2·0
4th week of fever	18	11·1	5·5	5·5	nil	15	nil	nil	nil	nil	nil

* 156 cases were diagnosed on serological and clinical evidence and 42 by blood culture.
† Most of the cases were of 7 days' duration.

For local treatment of bacterial and mycotic diseases of the skin and suppurative wound infections

STEROSAN

3,7-Dichloro-8-oxyquinaldine

OINTMENT PASTE

For detailed literature please write to:
AMALGAMATED CHEMICALS AND DYESTUFFS COMPANY LIMITED
P.O. Box 965, Bombay

MANUFACTURED IN SWITZERLAND BY

J. R. GEIGY S.A.

IF *YOUR PATIENT IS IN NEED OF*
Vitamin B-Complex in a practical form

PRESCRIBE

VIBITON

B.C.P.W. BRAND

POTENT & PALATABLE

VITAMIN B-COMPLEX

useful in

Vitamin deficiency resulting in symptoms of fatigue, anorexia and loss of weight, etc.

One fluid ounce provides Vitamin B_1 25 mg., Vitamin B_2 4 mg., Vitamin B_6 4 mg., Cal. Pantothenate 12 mg., Choline Chloride 20 mg., Nicotinic acid 48 mg., besides Liver Extract equivalent to 80 gm., of fresh liver.

Available in 4 oz, phials

BENGAL CHEMICAL :: CALCUTTA :: BOMBAY :: KANPUR

FAME through SAFETY

'CALCIUM SANDOZ'

THE ORIGINAL CALCIUM PREPARATION

AMPOULES 5 & 10 cc., 10 or 20%, contain the more soluble, better absorbed double salt calcium-gluconogalacto-gluconate.

EXTRA SAFETY: In addition to severe bacteriological and biological laboratory tests, a large number of finished ampoules of each batch of "Calcium-Sandoz" is clinically tried in several well known Swiss tuberculosis sanatoria before the batch is released for sale.

THE ORAL FORMS, chocolate flavoured tablets and plain granules, are easily absorbed and do not constipate.

ANOTHER FAMOUS SANDOZ PREPARATION

BELLERGAL

restores autonomic balance in functional disorders of circulatory, intestinal and endocrine origin.

SANDOZ LIMITED

BASLE — SWITZERLAND

SANDOZ

SALMONELLA PARATYPHI C

Sera collected during	Total No. of sera tested or the No. of cases examined	Percentages of sera showing O agglutinins for Salm. paratyphi C upto the titres specified below				Total No. of sera tested or the No. of cases examined	Percentages of sera showing H agglutinins for Salm. paratyphi C upto the titres specified below				
		1:25	1:50	1:125	1:250		1:25	1:50	1:125	1:250	1:500
5-7 days of fever† ..	28	nil	nil	nil	nil	47	6·3	2·1	nil	nil	nil
2nd week of fever ..	52	3·8	1·9	nil	nil	84	15·4	5·9	nil	nil	nil
3rd week of fever ..	23	4·3	nil	nil	nil	50	12·0	8·0	nil	nil	nil
4th week of fever ..	16	12·5	6·2	nil	nil	19	5·2	15·7	nil	nil	nil

† Most of the cases were of 7 days' duration.

Percentage of cases showing different titres of H and/or O type of agglutinins for Salm. typhi in this series:

4·7 per cent. of the proved cases had neither H nor O agglutinins for *Salm. typhi* in their sera when the organism was isolated from their blood but none of them showed complete absence of agglutinins on subsequent tests as indicated in Table VII. 9·3 per cent of these cases showed absence of O agglutinins only when the organism was isolated from their blood and two out of the twenty-three who were examined during the 3rd week of illness also did not show any evidence of O agglutinins. Highest titre recorded for O agglutinins at the time of the isolation of *Salm. typhi* was 1: 5000. 11·6 per cent. of the proved cases did not show H agglutinins when bacteriæmia was demonstrated in their blood. But when tests were repeated on these cases in the 2nd or 3rd weeks of their illness H agglutinins were observed in them in a titre not less than 1: 250. Highest titre recorded for these agglutinins in association with bacteriæmia was 1:2500.

Considering the whole series of 198 cases of typhoid fever including the proved cases, 7·5 per cent of the 40 cases that were examined in the first week of illness did not show H and O agglutinins. This percentage came down to 3·8 in 128 that were tested in the 2nd week and it came down to nil amongst 72 cases who were tested in the 3rd week of illness. 25·0 per cent of the cases examined in the first week started with absence of O agglutinins. Their percentage came down to 17·6 amongst the cases tested in the 2nd week and 7·9 per cent amongst cases tested in the 3rd week. Highest titres recorded were 1:2500, 1:5000 and 1:12500 respectively in the 1st, 2nd and 3rd weeks. 15·0 per cent of the cases examined in the 1st week showed no H agglutinins. This percentage came down to 9·9 in the cases examined during the 2nd week of illness. No evidence of these agglutinins was seen in 8·0 per cent of these cases even when they were examined in the 3rd week of illness. Highest titres recorded were 1:12500, 1:5000 and 1:12500 respective in the first, second and third weeks.

TABLE VII—PERCENTAGE OF SERA [OBTAINED FROM (1) 42 PROVED CASES OF TYPHOID FEVER WHEN *Salm. typhi* WAS ISOLATED FROM BLOOD, (2) 198 CASES OF TYPHOID FEVERS CONSISTING OF 42 ABOVE-MENTIONED PROVED CASES AND 159 CASES DIAGNOSED ON SEROLOGICAL AND CLINICAL EVIDENCE] SHOWING DIFFERENT TITRES OF H & O AGGLUTININS FOR *Salm. typhi*.

Results of Widal tests of	Total No. of Sera	Titre of TO, Nil							Titre of TO, 1:25 or 1:50						
		Titre of TH							Titre of TH						
		nil	1:25 or 1:50	1:125	1:250	1:500	1:1250	1:2500	1:5000	nil	1:25 or 1:50	1:125	1:250	1:500	1:1250	1:2500
Proved cases of typhoid when associated with bacteræmia	42	4·7	nil	2·3	2·3	nil	nil	nil	nil	6·9	6·9	6·9	2·3	nil	nil	nil
Cases examined during the 1st week of illness	40	7·5	12·5	2·5	2·5	nil	nil	nil	nil	7·5	2·5	nil	2·5	2·5	nil	nil
Cases examined during the 2nd week of illness	128	3·9	1·5	3·9	4·5	3·1	0·7	nil	nil	1·5	7·0	3·1	4·0	3·9	0·7	0·7
Cases examined during the 3rd week of illness	72	nil	1·3	nil	1·3	1·3	2·7	nil	1·3	1·3	2·7	1·3	1·3	2·7	1·3	nil

TO=O agglutinins for *Salm. typhi.* TH=H agglutinins for *Salm. typhi.*

Results of Widal tests of	Total No. of sera	Titre of TO, 1:125 — Titre of TH							Titre of TO, 1:250 — Titre of TH						
		nil	1:25 or 1:50	1:125	1:250	1:500	1:1250	1:2500	nil	1:25 or 1:50	1:125	1:250	1:500	1:1250	1:2500	1:5000
Proved cases of typhoid when associated with bacteriæmia	42	nil	2·3	nil	4·6	2·3	nil	nil	nil	8·2	2·3	6·9	8·1	nil	nil	nil
Cases examined during the 1st week of illness	40	nil	nil	nil	2·5	nil	nil	nil	nil	10·0	2·5	12·5	5·0	2·5	2·5	nil
Cases examined during the 2nd week of illness	128	2·3	3·1	0·7	3·1	3·1	0·7	0·7	1·5	2·3	2·3	0·7	2·3	1·5	0·7	1·5
Cases examined during the 3rd week of illness	72	1·3	2·7	nil	4·1	4·1	4·1	nil	2·7	1·3	1·3	2·7	9·7	1·3	2·7	nil

TO=O agglutinins for *Salm. typhi.* TH=H agglutinins for *Salm. typhi.*

Results of Widal tests of	Total No. of sera	Titre of TO, 1:500 — Titre of TH									Titre of TO, 1:1250 — Titre of TH							
		nil	1:25 or 1:50	1:125	1:250	1:500	1:1250	1:2500	1:5000	1:12500	nil	1:25 or 1:50	1:125	1:250	1:500	1:1250	1:2500	1:5000
Proved cases of typhoid fever associated with bacteriæmia	42	nil	2·3	2·3	4·6	4·6	6·9	nil	nil	nil	nil	2·3	nil	6·6	6·6	nil	nil	nil
Cases examined during the 1st week of illness ..	40	nil	2·5	nil	nil	2·5	nil	nil	nil	2·5	nil	2·5	nil	nil	2·5	2·5	nil	nil
Cases examined during the 2nd week of illness ..	128	0·7	1·5	4·6	3·1	6·2	4·6	0·7	1·5	nil	nil	0·7	nil	nil	nil	0·7	0·7	0·7
Cases examined during the 3rd week of illness ..	72	2·7	nil	nil	4·1	6·9	4·1	4·1	nil	1·3	nil	nil	nil	1·3	4·1	4·1	1·3	1·3

TO=O agglutinins for *Salm. typhi.* TH=H agglutinins for *Salm. typhi.*

Results of Widal tests of	Total No. of sera	Titre of TO, 1:2500 — Titre of TH							Titre of TO 1:5000 1:12500 — Titre of TH	
		nil	1:25 or 1:50	1:125	1:250	1:500	1:1250	1:2500	1:2500	1:12500
Proved cases of typhoid when associated with bacteræmia ..	42	nil	nil	nil	nil	nil	nil	nil	2·3	nil
Cases examined during 1st week of illness	40	nil	nil	nil	nil	nil	nil	2·5	nil	nil
Cases examined during 2nd week of illness	128	nil	nil	nil	0·7	0·7	0·7	nil	0·7	nil
Cases examined during 3rd week of illness	72	nil	nil	nil	nil	nil	nil	2·7	nil	1·3

TO=O agglutinins for *Salm. typhi.* TH=H agglutinins for *Salm. typhi.*

P.A.S
PARA-AMINO-SALICYLICACID
Entero-Coated Granules
THE ORIGINAL PRODUCT
USED SINCE 1944 IN THE TREATMENT OF
TUBERCULOSIS
DUMEX
DANISH UNITED MEDICAL EXPORT
Sole Distributors
THE EAST ASIATIC CO., (INDIA) LTD.
21-A, Wardby Road, Bombay.

NUTRITION IN CONVALESCENCE

B. I. Essence of Chicken contains about 8% essential amino acids and lower peptides derived from chicken meat protein digestion. Being fully free from extractives and indigestible factors the Essence admirably suits the essential needs of all those whose digestion is at a very low ebb owing to prolonged illness, weakness and exhaustion. A ready-made nutrition of high biological value at once insures absorption, quickens recuperation and infuses new strength & vigour into the worn-out system

INDICATED IN

Under-nutrition, Debility, Typhoid, Anæmia, Tuberculosis, Diabetes, Malaria, Neurasthenia, Weak Digestion, Convalescence after Pneumonia, Infective Fevers, Pregnancy and Lactation and all metabolic diseases due to Malnutrition.

DOSE

2 to 3 ampoules to be taken daily diluted with orange juice or plain water. (The contents must be finished at once after opening, as, being a nitrogenous food, it is likely to be decomposed).

PACKINGS

Issued in boxes of 6 and 12 ampoules of 10 c. c. Bulk-packings of 50 and 100 ampoules can also be supplied on order.

B.I. ESSENCE of CHICKEN

FOR ORAL USE

A Highly Nutritive and Tasty Essence of Predigested Protein food

BENGAL IMMUNITY CO., LTD. CALCUTTA.13

Salmonella Paratyphi A Infection

Salm. paratyphi A was isolated from blood in one case only whereas *Salm typhi* was isolated from 64 cases (42 only were tabulated because of insufficient data about others) during the period under review.

Table VIII—Cases Showing Diagnostic Titre of Agglutinins for Salm. paratyphi A Associated with Lower Titre of TO and TH.

Case No.	*Day of illness*	*Titre of TO*	*Titre of TH*	*Titre of AH*
620	26	Nil	Nil	1:250
59	not known	Nil	1:25	1:250
465	9	1:25	1:125	1:250
443	31	not done	1:50	1:250
144	5	Nil	1:50	1:500
602	12	Nil	1:250	1:500
227	11	1:25	1:50	1:500
782	14	1:50	1:50	1:500
640	26	1:125	Nil	1:500
94	13	1:125	1:250	1:1250
1037	not known	1:50	1:50	1:1250
484	12	1:50	Nil	1:1250

Findings of the Widal tests in 12 cases shown in Table VIII were in favour of a diagnosis of paratyphoid A infection but the incidence of paratyphoid A infection could not be always judged accurately from the results of the Widal test especially when they were not put up regularly every 4 or 5 days throughout the illness of every case of continuous fever admitted to the wards. *Salm. paratyphi A* infection could exist without showing diagnostic titre of agglutinins for *Salm. paratyphi A* or of *Salm. typhi* as was illustrated by the only case from whose blood *Salm. paratyphi A* was isolated. He showed complete absence of agglutinins for *Salm. typhi* and *Salm. paratyphi A* on the 8th day of illness when the organism was isolated from his blood. There was another pitfall also, experienced by the writer in judging the nature of the infection from the Widal tests. It was concluded from the results of the agglutination tests shown in Table V that 1:250 titre of agglutinins for *Salm. paratyphi A* in a case with suggestive clinical history was diagnostic of paratyphoid A infection. This conclusion should be allright in most cases but it did not always hold good as was illustrated by the following case. *Salm. typhi* was isolated on blood culture of a case on the 9th day of typhoid fever and on the 5th day of the relapse. Complete absence of flagellar agglutinins for *Salm. typhi* and *Salm. paratyphi A* was recorded on the 9th day of typhoid fever. But on the 5th day of relapse when *Salm. typhi* was isolated again he showed 1:500 titre of agglutinins for *Salm. paratyphi A*. The Widal test repeated 6 days later, also showed the same titre of agglutinins for *Salm. paratyphi A* though the titre of flagellar and somatic agglutinins for *Salm. typhi* was 1:50 and 1:25 respectively. Inconsistency of this type was not met with in Widal tests done in other 64 cases from whose blood *Salm. typhi* was isolated. In fact, titre of either H (flagellar) or O (somatic) agglutinins for *Salm. typhi* was always higher than that of agglutinins for *Salm. paratyphi A, Salm. paratyphi B* (type) and *Salm. paratyphi C* (type) except in two out of 64 cases from whom *Salm. typhi* was isolated.

Results of Widal tests suggestive of paratyphoid B or paratyphoid C infections—There were four such cases as shown in Table IX but the organism was not isolated on blood culture of these cases.

Table IX—Results of the Widal Tests of Cases Showing 1:250 or Higher Titres of H (Flagellar) Agglutinins for Salm. paratyphi B or Salm. paratyphi C.

Case No.	*Day of illness*	*Titre of TO*	*TH*	*AH*	*BH*	*CH*
1039	15	Nil	1:50	Nil	N	1:250
514	35	Nil	Nil	Nil	Nil	1:250
1424	15	1:50	1:125	Nil	1:500	Nil
1161	15	1:25	Nil	1:50	1:500	Nil

Titre of H and O type of agglutinins for Salm. typhi in fatal cases—There were 13 fatal cases as shown in Table X. Two of these had titre of O agglutinins above 1:1000 and six had titre of H agglutinins higher than 1:1000.

Table X—Showing Titres of TO and TH in 13 Fatal Cases

Titre of TO	*Nil*			*1:25*	*1:50*	*1:125*			*1:500*			*1:1250*	*1:12500*
Titre of TH	Nil	1:250	1:1250	1:50	1:1250	1:500	1:1250	Nil	1:125	1:1250	1:5000	1:250	1:1250
Day of the test	9	10	16	9	8	26	11	8	8	12	6	5	9
Day of death	16	10	18	9	18	32	17	9	9	35	17	7	9
Salm. typhi isolated on blood culture	+	+	−	+	−	−	+	−	−	−	+	−	−

Note + = isolated, − = not isolated

Bhatnagar had reported the association of high titre of O agglutinins with toxæmia in toxic type of cases. He had explained that abnormal O antibody production in these cases was associated in some unknown manner with toxin liberation. Whatever the explanation of association of high titre of agglutinins with toxæmia might be but the results of these cases suggested that H and/or O agglutinins in high titres were sometimes associated with toxæmia and fatal issue. Complete absence of O agglutinins was observed in three of these cases though their Widal reaction was put up on the 9th, 10th and 16th day respectively and in other two cases titre of O agglutinins was not higher than 1:50. Absence of H agglutinins alone was also recorded in one out of these three cases. When such a varying concentration of H and O agglutinins could be present in fatal cases it was obvious that no set rules based on the titres of H and O agglutinins only could be laid down for judging the prognosis of these cases.

Discussion

Surveys to determine the level of natural agglutinins against typhoid group of organisms had been conducted by a number of workers in different parts of the world. In India, Pasricha *et al* (1936) reported a survey carried out by them at Calcutta and Darjeeling. Their figures of O agglutinins for *Salm. typhi* and *Salm. paratyphi B* were lower than those found in Jamshedpur during the survey reported above. Higher frequency and concentration of O agglutinins observed in Jamshedpur when compared to the observations made in a city only 110 miles away, obviously due to the technique used. Bhatnagar *et al* (1937) using living cultures and 1·1 c.c. wide round-bottomed tubes found O agglutinins in all the fifty sera examined by them in titres varying from 1:25 to 1:250. They also demonstrated the significant difference in the results of the tests done in Dreyer's tubes and 1·1 c.c. wide round-bottomed tubes. It was, however, difficult to explain much lower frequency of O agglutinins for *Salm. paratyphi A* in Jamshedpur than what was seen in Calcutta. The only suggestion that could be made to explain this, was that the incidence of paratyphoid infection might be very low in Jamshedpur. This, however, was not very likely in view of the findings recorded in Table VIII. The only other possibility was that the strain of *Salm. paratyphi A* used in conducting this survey was rather insensitive. Figures for H agglutinins especially of *Salm. typhi* in the present survey were much lower than those reported by Pasricha *et al* (*loc. cit.*) Lower frequency of these agglutinins in the population of Jamshedpur could be explained by the possibility of lower incidence of enteric infections in Jamshedpur than was at Calcutta. Higher frequency and concentration of H agglutinins had been reported from the inhabitants of some tropical countries than were recorded by the British workers in England.

Topley and Wilson (1933) referring to the work of Madgwick and Partner who reported higher frequency of H agglutinins amongst inmates of an asylum suffering from pulmonary tuberculosis suggested that typhoid agglutinins were more frequent in certain infections than in others, or than in normal persons. Pasricha *et al* (*loc. cit.*) recorded the frequency of agglutinins for the typhoid-paratyphoid group of organisms in diseases other than enteric. They concluded from their findings that they did not support the generally accepted view that in febrile conditions non-specific stimulation of agglutinins occurred. Observations about the frequency of agglutinins during the different diseases recorded in Tables I to IV definitely showed that H agglutinins were stimulated by most of the non-enteric infections commonly met with in the medical wards at Jamshedpur. It was, however, realised that more data about the frequency of agglutinins for the typhoid-paratyphoid group of organisms in these diseases was required before more reliable conclusions could be made.

The odds against a person being a normal member of the population were much less at the same titre of H agglutinins for *Salm. typhi* in a resident of Jamshedpur than were reported by Topley and Wilson (*loc. cit.*) for an English population. They were 36 to 1 at a titre of 1:40 in England and figures for the population at Jamshedpur were 37 to 1 at 1:125 titre during the part of a year when incidence of typhus was low and the balance of odds was 19 to 1 only when the incidence of typhus was high.

Increase in frequency of H agglutinins for *Salm. typhi* during different stages of illness followed the same course as had been previously reported by other workers and needed no comments. Changes in the frequency of O agglutinins however did not follow a similar course. Frequency in the first week was less than that for H agglutinins at the same stage of illness and it was nearly the same in the 2nd, 3rd and 4th weeks. Concentration increased to maximum in the 2nd week. It gradually fell down in the 3rd and 4th weeks and came down to a level lower than was recorded at the end of the first week of illness.

Summary and Conclusions

1. A survey of 251 normal sera from the population of Jamshedpur showed O agglutinins for *Salm. typhi, Salm. paratyphi A, Salm. paratyphi B* (type) and *Salm. paratyphi C* (type) in 40·4%, 0·3%, 9·5% and 1·4% respectively and 10·3%, 3·4%, 12·3% and 5·7% respectively of the sera showed H agglutinins for these organisms.

2. Widal tests of 270 cases suffering from various medical diseases including upper respiratory catarrhal conditions;—malaria, pneumonia, tuberculosis, amœbic hepatitis and anæmia, 162 cases of P.U.O.'s and 233

cases of typhus showed that there was no significant stimulation of O agglutinins for *Salm. typhi* during these diseases except in typhus. O agglutinins for other members of the typhoid-paratyphoid group were also affected but very little by disease. Frequency and concentration of H agglutinins for *Salm. typhi* were, however, increased during these diseases. Typhus fever caused maximum stimulation. Malaria, upper respiratory catarrhal conditions, P.U.O.'s and pneumonia stood next in order.

3. The odds in favour of the diagnosis of enteric infection were calculated on the basis of the frequency and concentration of H and O agglutinins for *Salm. typhi* and H agglutinins for *Salm. paratyphi A* observed in 'normal' sera and during non-enteric diseases. The balance of odds was much lower for the same titre during the part of a year when the incidence of typhus was higher than when it was very low. Titre of H and/or O agglutinins for *Salm. typhi* below 1 : 125 was not significant. 1 : 125 titre of H agglutinins was also not significant during the part of a year when the incidence of typhus was high. 1 : 125 titre of O agglutinins for *Salm. typhi* was of little significance all the year round whether the incidence of typhus was high or low.

4. Frequency and concentration of H and O agglutinins for the typhoid-paratyphoid group of organisms in 336 Widal tests done on 156 cases of typhoid fever diagnosed on serological and clinical evidence and 42 cases diagnosed by isolation of *Salm. typhi* on blood culture were tabulated. 74·68 per cent. showed O agglutinins by the end of the 1st week of illness. Frequency increased to 83·1 per cent in the 2nd week and it was 84·0 per cent in the 3rd and 4th weeks respectively. Highest concentration was observed in the 2nd week and it fell down both in the 3rd and 4th weeks. Rise and fall of the titres of O agglutinins was much different from the course followed by H agglutinins. Their frequency increased steadily from 79·6 per cent by the end of the 1st week to 98·4 per cent in the 4th week and highest concentration was recorded in the 3rd week unlike O agglutinins which rose to the maximum concentration in the 2nd week. O agglutinins for the paratyphoid group of organisms also showed slight increase in frequency and concentration during typhoid fever. H agglutinins for *Salm. paratyphi A* were observed in higher frequency and concentration by the end of the first week of the fever than was seen in 'normal' sera and in non-enteric diseases but both frequency and concentration came down in the 4th week unlike agglutinins for *Salm. typhi*, the frequency of which was sustained in the 4th week.

5. 11·6 per cent and 9·3 per cent respectively of the proved cases showed absence of H and O agglutinins when the organism was isolated on blood culture and complete absence of both these agglutinins was observed in 4·7 per cent. H agglutinins were, however, seen on subsequent tests in all these cases in 1 : 250 or higher titre but O agglutinins did not develop in 7·9 per cent of the cases that were tested in the 3rd week of illness.

6. Ratio between typhoid and paratyphoid A infection was 64 to 1 from the isolation of the organism by blood culture. But results of the Widal tests of 12 cases were suggestive of a higher incidence of paratyphoid infection than was indicated by the results of blood culture. Difficulties in judging the nature of infection from the Widal tests were illustrated by two cases. *Salm. paratyphi A* was isolated by blood culture from one case. His Widal done on the 8th day showed complete absence of agglutinins. Widal test of the other case showed 1 : 500 titre of agglutinins for *Salm. paratyphi A* and titre of H and O agglutinins for *Salm. typhi* were 1 : 50 and 1 : 25 respectively. But blood culture of this case showed *Salm. typhi* and not *Salm. paratyphi A*. Results of the Widal tests of four cases were suggestive of the existence of *Salm. paratyphi B* and *Salm. paratyphi C* infections.

7. The association of high titre of O agglutinins for *Salm. typhi* with fatal cases was previously reported. Present series of cases showed that 1 : 1000 or higher titres of both H and O agglutinins were sometimes observed in fatal cases.

ACKNOWLEDGMENT

I take this opportunity to thank the staff attached to the department of pathology, Tata Main Hospital for their cooperation and hard work. My thanks are also due to Lt. Col. N. Khan, M.D., R.A.M.C. (RETD.), Physician I/C Tata Main Hospital, for providing the necessary material for this investigation, his encouragement and personal interest during the progress of this work. I also thank Col. J. R. Kocchar, IMS. (RETD.), Director of Medical and Health Services, Tata Iron and Steel Company for permission to publish this paper.

REFERENCES

BHATNAGAR, S. S., FREEMAN, J. F., AND DHILON, C. S.—*Indian J. M. Res.*, 24:597, 1937.

BHATNAGAR, S. S.—*Brit. M. J.*, 1:417, 1944.

PASRICHA, C. L., PANJA, G. AND LAL, S.—*Indian M. Gaz.*, 71:245, 1936.

TOPLEY, W. W. C. AND WILSON—'An outline of immunity'. E. Arnold & Co., London, 1933.

TREATMENT SERIES

I

URAEMIA AND ITS TREATMENT *

C. H. PRIMLANI, M.B.B.S., F.R.F.P. & S., F.R.C.S,

Honorary Surgeon, Victoria Hospital, Ajmer.

Uræmia is not a disease, but a symptom-complex due to diverse causes. Urea is normally present in the blood and body in small quantities. It is only when it is found in excess that it really assumes a form dangerous to life. In this lecture the various means at our disposal to avert this danger are dealt with.

In order to comprehend fully the form of treatment to be adopted, it is necessary to diagnose the trouble and find out its cause, and also how the state of uræmia is brought about.

There are three forms of uræmia:—

(1) Uræmia through renal insufficiency.
(2) Uræmia on account of extra-renal causes.
(3) Uræmia due to both the above factors.

The causes of extra-renal uræmia are many—toxæmias of pregnancy, typhoid fever, pneumonia and other infectious fevers and even fasting. In order to make a proper diagnosis one must know about the various symptoms arising as a result of urea intoxication. They are: headache, drowsiness, hiccough, dimness of vision, transient paralysis and aphasia, nausea, vomiting, diarrhœa, pruritus, cramps, restlessness, convulsions, urinous breath, delirium and coma, the last being the most important from our point of view and one that is always found in the dangerous forms of uræmia.

When a patient comes in a comatose stage, the diagnosis of renal uræmia has to be made from the following conditions:—diabetes, cerebral haemorrhage, injury skull, brain tumour, insulin reaction, epilepsy, heat stroke, drug poisoning, pernicious malaria, carotid sinus reflex and high fevers. The history and clinical examination may show the presence of urea from 40 mgms. per 100 c.c. to 600 mgms., the normal concentration of urea in blood being 20 to 25 mgms.%. The extent of renal insufficiency is further proved by the examination of urine after administering phenolsulphonephthalein. In normal persons the dye appears in the urine in the first hour 40 to 60 per cent and 20 to 25 per cent in the second hour and the dye begins to appear in the urine within 5 to 10 minutes. If the time of appearance of the dye is delayed and the dye excreted is less than 25 per cent during the first hour, it shows serious renal damage. There are several other tests like indigo carmine, diastatic and phloridizine tests but phenolsulphonephthalein test is the most sensitive of all and an absolutely positive test for showing the degree of renal insufficiency.

Having made a diagnosis of renal disease as the cause of uræmia, one's efforts will be devoted to the removal of poisons from the body which occur as the direct result of loss of proper functioning of the kidneys. But before one discusses the ways and means of doing it, it will be helpful if one understands the mechanism of metabolic processes by which these poisons are produced.

The protein elements of food are digested in the stomach and intestines into proteoses, peptones and finally various amino-acids containing the group NH_2. The latter are absorbed into the portal circulation and carried to the body where they are utilised to build or repair tissues, furnish energy and produce ammonia, the latter serving to maintain the alkalinity of blood by combining with carbonic, lactic, phosphoric and oxybutyric acids. In the liver some of the NH_2 groups are converted into urea. In acidosis more of these groups go to form ammonia which combines with the acids and is excreted as ammonium salts in the urine. An early sign of acidosis is, therefore, an increase of urinary ammonia. This often occurs sometime before acetone bodies appear in the urine. Amino-acids and their disintegration products, urea and ammonia, are derived not only from food but also from disintegrating tissue proteins. The nucleoproteins contained in cell nuclei disintegrate in the body into the purine bodies —uric acid, creatine and creatinine. Uric acid is also derived from food, nucleoproteins, but creatinine formed from creatine is derived entirely from body tissue nucleins. Hence the importance of finding excess of creatinine in the blood as a signal danger. Urea, uric acid, ammonia, creatine and creatinine are the most important of non-protein nitrogenous constituents of the body and their quantitative estimation in the blood and urine furnishes us with valuable information in regard to metabolism and kidney function. Normally the blood contains per (hundred) 100 c.c. about 15 mgms. of urea-nitrogen, 2 to 3 mgms. of uric acid and 1 to 2 mgms. of creatinine. Urea retention in the body means bilateral kidney disease, A patient with a marked retention of urea in the blood say over 60 mgms. per 100 c.c. is a bad surgical risk. In renal disease chlorides are also retained. Blood urea increases with an increase in the protein diet, but not creatinine which is the product of endogenous metabolism. The presence of excessive creatinine is a sign of much greater danger than that of excessive urea. 5 mgms. of creatinine per 100 c.c. of blood means an early fatal outcome, whereas patients with even 500 mgms. of urea per 100 c.c. can recover with proper modern treatment. In extensive œdema or ascites a large amount of urea may be locked up in the exudate and hence the greater reliability of phenolsulphonphthalein test in the proper estimation of the renal impairment than the examination of blood urea. A creatinine examination is only called for when the urea concentration is found to be over 40 mgms. A uric acid estimation is of value only in the differential diagnosis of gout from non-gouty arthritis.

Prognosis

There may be a complete recovery in acute nephritis, but only a temporary one in chronic nephritis.

* Read at the Rajputana Medical Conference held at Jaipur.

Treatment

The treatment falls under three heads:—

(*a*) Less of Protein Diet—Borst forces his patients with severe uræmia to eat 200 gms. of butter and 20 gms. of sugar daily. To make them palatable a little bread or coffee may be given. If a patient can tolerate this, the urinary urea falls to 1 to 3 grams per day. With this diet a patient can have complete anuria for 25 days without showing signs of serious uræmia. Once in three weeks plasma transfusion may be given to make up the loss of body proteins. Patients with poor kidney function can thus be kept going in good condition for a long time.

(*b*) Large Intake of Fluids—A patient with uræmia should be given as much fluids as possible to dilute the poisons and help in their excretion.

(*c*) Excretion of the Poisons—This can be done through various channels:—Lungs, skin, intestines, serous membranes and kidneys.

(*i*) Excretion *through the lungs* is extremely small and impracticable.

(*ii*) With the usual *sweating* methods only about 2½ grams of urea can be excreted in 24 hours; with protracted immersion in a hot bath one may be able to get 4 to 5 grams. But this process is so exhausting to a patient who is already in a low state that best clinicians all over the world have abandoned this method.

(*iii*) The third channel of excretion is the *intestines*. The ordinary method of inducing diarrhoea by cathartics has been generally abandoned, being very exhausting if appreciable amount of urea has to be excreted by this way.

But this method has been revived of late in a different way. Dr. Groen of Amsterdam reintroduced this form of therapy in 1941 by experiments on dogs with loops of intestines. During the war some surgeons used isolated loops of human intestines for dialising. The dialising power is greatest in the jejunum, but less in ileum and still less in colon. After various experiments the following method has been found to be the best: About 3 to 4 feet of the terminal part of the ileum is isolated, the continuity of the remaining intestines is restored by end-to-end anastomosis. The separated loop of ileum with its mesentery attached is brought out on the abdominal surface and the abdomen closed. The perfusion fluid, the composition of which is stated later, is made to pass through the proximal portion of the gut at the rate of one litre per hour and brought out at the distal end. The rinsing fluid is made to pass through a thermostatically controlled bath to keep it at body temperature. It is seen that 10 to 12 gms. of urea can be excreted in a day by this method. If the patient's daily output of urea can be reduced to 1 to 3 gms. by keeping him on high caloric and low protein diet, a patient can lead a comfortable and useful life by working during the day and using the perfusate at night. If this cannot be done the next best method is to introduce the rinsing fluid through an opening in the appendix. All these methods have given excellent results in some cases, but they have not reached the stage of perfection, as the stoma in the abdominal wall contracts, or becomes septic and the whole process becomes vitiated.

Peritoneal Lavage—The peritoneum offers a vast dialising surface of 17,000 sq. cm. The idea is not new but only since 1923 it has been resuscitated. In 1946 Abbot and Shea published some authentic work on the subject. Frank Seligman of Holland published some successful cases of peritoneal lavage. By this method 20 to 50 gms. of urea can be removed from the blood in a day. Two tubes are introduced side by side in the abdominal cavity between the umbilicus and the anterior superior iliac spine, one for the inflow and the other for the outflow of the rinsing fluid. If the abdomen is much retracted, two litres of fluid may be injected into it before inserting the tubes. The reservoir containing the fluid is connected with the inflow tube. One litre is allowed to run in one hour. The tubes should not be retained for more than 36 hours for fear of infection. Several cases are on record where lives have been saved by this method when other means cannot be employed. Strict regard should be given to asepsis.

Artificial Kidney—The best and most useful method of excretion is by an artificial kidney. An artificial kidney removes from 100 to 300 grams of urea in one day. Most serious cases of uræmia with urea of 500 mgms. per 100 c.c. of blood will regain consciousness within 5 to 6 hours. The best artificial kidneys are at present produced in Holland. The dialising membrane is a long cellophane tube which is spirally wound round a cylinder. This cylinder is immersed in a bath containing the rinsing fluid. It is rotated by some motor power. The cellophane tube is connected on one side to an artery usually the radial and on the other side a vein. The whole is supported by a frame on 4 legs. There are a few important points to be observed in the use of this artificial kidney. To prevent clotting large doses of Heparin have to be given. Just enough has to be given as large doses may produce bleeding from different parts of the body. In these cases we have also to abstain from any injury to the body. One gramme of Heparin will be quite safe to give. It need not be emphasised that thorough sterilisation of the whole apparatus is most essential. The rinsing fluid has to be kept at body temperature. It has the following formula—

Sodium chloride ..	0·6%
Potassium chloride ..	0·04%
Sodium bicarbonate ..	0·2%
Glucose ..	2%

The dialising membrane in the artificial kidney not only removes urea from the blood but various other non-protein nitrogenous substances of small molecules, and some minerals—uric acid, creatinine, indoxyl, sodium, potassium, magnesium, calcium. One has, therefore, to observe the pH value of the blood before

(Concluded in page 263, column 1)

CASE NOTES

ALLERGIC MANIFESTATION OF ROUNDWORM INFECTION

N. R. KARODE, M.B.B.S.

Borivli (Bombay Suburban)

Miss C., aged 19 years, unmarried, first consulted me for fever of two days' duration with backache and headache. Probable diagnosis of influenza was made and she was treated with a diaphoretic mixture and A.P.C. powders. After two days her condition was reported to be serious and I examined her at her place. She had urticarial patches all over the body, her face was swollen with intense itching all over. There was severe colicky pain in the abdomen; she had passed stools and flatus in the morning. There was no vomiting and temperature was 102° F., pulse 120 per minute, respiration 18 per minute; cardiac and respiratory systems were normal. She had not slept for 24 hours and she begged that something be given for inducing sleep.

On examination there was tenderness around the umbilicus but no rigidity. No sign of acute abdomen was present. No history of internal worms was available.

Allergic urticaria of unknown origin was diagnosed and she was treated symptomatically with pethidine injection (100 mgm.) for inducing sleep and glucose and calcium were given intravenously. Santonin grs. 3 was given by mouth. Next day her condition was worse; as breathlessness was added to her original symptoms. adrenalin 1 c.c. was given intramuscularly when needed. Pethidine had very little effect. She passed no worms.

On the third day she gave a history of having passed roundworms about 10 years back. Santonin was repeated but till the 5th day her condition was same, inspite of treatment. On the 5th day in the morning (from the day of urticarial rash) she passed a bundle of roundworms and all her symptoms completely disappeared.

I saw her again after a year for abdominal pain and she was given santonin with passing of worms and disappearance of symptoms.

The interesting points in the case were: (1) The patient had passed worms only in her childhood. (2) The worms had caused subacute intestinal obstruction, skin rash and asthmatic breathing. (3) Till the worms were passed no relief was obtained with even large doses of sedatives.

HYDATID CYST IN THE NECK

A. HAMID, M.R.C.S., L.R.C.P., D.C.H. (LOND.)

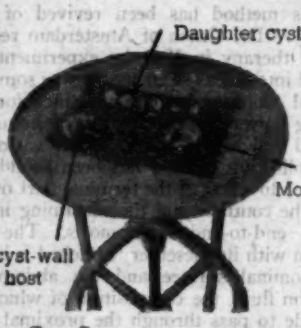
Civil Surgeon and District Medical Officer, Barwani, Madhya Bharat

A village woman aged 20 years, married, admitted in the Hospital for the treatment of swelling on the left side of the neck.

Short history—The swelling was at first of small size as that of a groundnut but it gradually increased within 1½ years to the size of a coconut. It appeared without any pain in the neck or malaise in the body. On local examination it was found that the swelling was cystic in feel and situated in the posterior triangle along the lateral border of the sternocleidomastoid. It was freely movable, not adherent to skin but fixed to the deeper structure of the neck. When pressed it was found bulging in the anterior triangle near the trachea. The swelling was fluctuating, cold and painless.

General condition of the patient was quite good, other systems being normal. She was 100 per cent vegetarian for the last 8 years but before that she used to take meat occasionally. There is no history of keeping any dogs in the house.

She was admitted on 27-6-1950, operated on 30-6-1950 under chloroform anæsthesia. Before the excision, it was necessary to know the contents of the cyst in order to differentiate between a cold abscess, branchial cyst and lymphatic swelling in the neck. It was tapped by ordinary bore needle. Surprisingly thin clear fluid like C.S.F. came out of the needle under tension. About 30 c.c. was aspirated by the syringe, and until then the diagnosis was doubtful and it was thought it might have some connection with the meninges. When half of the cyst collapsed and the fluid could not be drawn any more, it was decided to cut open the cyst by longitudinal incision. As soon as the cyst was opened, a white mass appeared in the wound which bulged out after the opening was enlarged. There was one big and thick-walled ruptured cyst and there were five other small cysts just like pigeon eggs of graded size. The cavity was cleaned and the wound was a little more enlarged to extirpate



THE CONTENTS OF THE CYST.

the fibrosed wall of the cyst completely. It was done with difficulty as it was adherent to the structure of the posterior triangle from the tip of the mastoid down the clavicular junction of the sternocleidomastoid muscle. The wound was closed with drainage. The patient was discharged cured on 12-7-1950.

This case has been published because of its occurrence at such a rare place.

JOURNAL OF THE

INDIAN MEDICAL ASSOCIATION

CALCUTTA, APRIL, 1951

DRUG RESEARCH INSTITUTE

We extend our welcome to the Central Drug Research Institute opened in February this year at Lucknow. It is a right step taken towards lifting our people from the lower depths of death and disease. Hurdles, of course, are still numerous and a major part of the obstacle race that we are in, is still before us.

In India no less than ninety million people are attacked by malaria every year, about half a million deaths occur annually from tuberculosis, infant mortality and mortality among women due to the effects of child-bearing are of the highest in the world, and the incidence of both epidemic and endemic diseases like smallpox, dysentery, cholera, plague and typhoid is staggeringly high while the standard of national health and our people's sense of hygiene remain simply deplorable.

On the day of its opening, the Director of the Institute, Sir Edward Mellanby, rightly pointed out that so far as the health of the country is concerned drugs form only the second line of defence, the first line being always the public health services. Public health depends largely on sanitation and drainage, pure and abundant water supplies, nutritional diet etc. These being hopelessly inadequate in our country, the need for making rapid provision for them is surely urgent and its cost is bound to be colossal. It is also true that the strengthening of this first line of defence cannot be accomplished overnight; it has to be built up and the process cannot but be long-drawn-out. Meanwhile, for the sake of our national health we have to engage our all-out efforts in mobilising the second line.

So long our entire national economy was bound fast to the interests of countries abroad, and the question of developing national industries—specially those of technical nature—had naturally been deferred. As a result, we had to depend for drugs almost wholly, except for a few pharmaceutical articles, on foreign countries. In 1949 our drug imports rose to the staggering figure of eight crores of rupees from two and a half crores in 1930. This enormous drain of our national wealth tells seriously on our country's economy. Most of the drugs mentioned in the British and other pharmacopoeias grow in India which possesses varying climatic conditions and can be described as the epitome of climates, seasons and soils of practically the whole world.

Sir Edward Mellanby in his speech at Lucknow said with a ring of regret, "It is an astonishing fact that whereas a large part of the plants from which official drugs in the pharmacopoeia are made, are already grown in this country, yet many of these drugs are imported in large quantities. In some cases, plants and other natural products are exported from India and the purified active principles are then reimported for medical use." From the national point of view, this is a double waste. If we can replace the imported drugs by those manufactured here in India, we can achieve the much desired self-sufficiency in drugs and at the same time lower considerably the cost of medicinal goods, bringing them thus within an easier reach of the common man.

The function of the Research Institute at Lucknow must be more than merely an academic research in medicine. Mass-scale production of the common and useful drugs is also of paramount importance; for, at the prevailing rates, penicillin and sulpha drugs are beyond the means of our masses. It is not strange, therefore, that the poor folk have a leaning, almost a craze, for the so-called indigenous medicine which, if not anything else, is cheap. It is a pity that nothing has been done so far to explore and tap the vast resources of our herbs and plants. The countries of the East have, from time immemorial, remained a rich nursery of medicinal plants. The ancient systems of medicine bear a testimony to the enormous possibilities of drug industry in India. The herbal remedies of our country must now be analysed scientifically in the laboratory and after proper testing either rejected or added to the general pharmacopoeia.

Such analytic work requires a long, neat and laborious process which is mostly beyond the scope of any private institution. An all-India Research Institute like this financed and manned by the Central Government is the only answer to such wide and pressing need. The Institute may and should also provide technical advice and help to the existing laboratories which are already engaged in the manufacture of drugs from local resources and reserves. One of the causes why the growth of the drug industry in India has been hampered so long is the want of a competent agency of which advice relating to the cultivation and culture of drugs could be sought. In western countries, there are plant research bureaus which enquire and consider all questions pertaining to drug cultivation. The Lucknow Institute also ought to develop into a central bureau like this in our country.

Col. Chopra in his address drew attention to the fact that plants containing medicinal principles grow abundantly in our country and about 2,000 of the 11,000 species found in India are already enumerated in the indigenous medicine. "The chemical investigation on plants so far has confined itself to the discovery of alkaloids, glucosides, essential oils etc. An enormous field yet unexplored is open to the investigators if plant research receives a new orientation in the Institute and plant antibiotics are also studied." The plants and, in a large number of cases, their active principles also are known and what remains to be done is their scientific processing; and we fervently hope that the Central Drug Research Institute will go a long way to make up the big leeway in this regard.

We agree with the Prime Minister, Sri Nehru, who inaugurated the Institute that drug research on a scientific basis is quite essential for any country and more specially for our country. We hope that the setting up of the Institute would promote the develop-

ment of scientific outlook in the people and would also put a stop to the large-scale imports of drugs into India by making the country self-sufficient. Let us hope, moreover, that research works conducted here would find out new methods which would alleviate not only our sufferings, but would also provide the world with dependable agents for fighting diseases.

It is a happy indication that the old, hackneyed cry of shortage of funds was not raised while undertaking the chain of proposed eleven national laboratories to be opened by the Council of Industrial and Scientific Research in India. More than Rs. 7,00,000 have already been spent on making suitable alterations and arrangements in the old Chattar Manzil Palace of Lucknow for providing gas, water, electric supply etc. for the laboratories of this Institute. The laboratories, it is stated, have been equipped with specialised apparatus, and chemicals worth over Rs. 2,00,000 have been provided for. The Institute as it stands now has five divisions of Chemistry, Biochemistry, Microbiology, Pharmacology and Clinical Science. A sixth division of Botany is likely to be added in the near future. The Institute is also to include two important side sections—an animal house costing about Rs. 2,50,000 to maintain experimental animals in ideal hygienic conditions, and a museum for keeping valuable collections of medicinal plants and drugs.

The beginning, of course, augurs well of the future. The Research Institute has immense possibilities for developing and resuscitating the potential drug resources of our land. We do not like to be critical at this budding stage of the Institute, though forebodings naturally occur when we are flooded with so many paper-schemes here and there. The success of the Institute will depend ultimately on the extent of sincere and painstaking work put in by the officers and authorities concerned and whole-hearted co-operation of the medical profession.

LATE MAJOR M. G. NAIDU

We are extremely sorry to announce the death of Major M. G. Naidu, ex-President of our Association, on 12th February, 1951, at the age of 83 at his residence, "Golden Threshold" at Hyderabad, Deccan. He was a member of the Nizam's Medical Service and adorned many important administrative offices in the State.

When the members of the medical profession from different parts of India joined hands to establish an organisation of theirs, the latent urge in Major Naidu for such a fraternity found ready response in him and he took upon himself to organise the profession in the South under the banner of the Indian Medical Association and laboured hard to get a foothold for it in the State of Hyderabad. Perhaps it was due to his resourcefulness and organising ability that it was possible for us to meet for the first time, so far, in a state under the princely order of the British regime in our annual All-India Conference at Hyderabad. In this achievement the hidden hand of Major Naidu could be felt unmistakably.

Major M. G. Naidu.

The medical profession of our country bestowed upon him the highest honour in their possession and elected him as President of the ninth Medical Conference held at Lucknow. His commentary on the burning problems that confronted the then medical profession and the lead he gave for its solidarity bear ample testimony to his close study of all that pertained to the profession.

His love and esteem for our Association which he nurtured with all the fondness and care it needed in its earlier growth, did not die out with his growing age and retirement from active professional work as could be evidenced from his attendance at our annual conferences held in different parts of the country including the last one held at Sholapur. He was then found quite hale and hearty and little did we know that it was the last time that we were having the privilege of his company and personal guidance.

In the field of social reform he was also a pioneer. When strict adherence to orthodoxy and old practices were the order of the day, he accepted as his partner in life the talented Bengali lady, Srimati Sorojini, daughter of the noted educationist, Sj. Aghorenath Chattopadhyay, who was then in the Nizam's educational service. Though later in life Srimati Sarojini Naidu came into very much prominence for her incarceration to free our country from foreign domination, Major Naidu had in her an ideal companion who stimulated him to take lively interest in matters related to the common good of the profession and the society.

Though ripe with age and honours Major Naidu's death has created a void in the rank of the leaders of our Association which would be impossible to fill up. He has left behind his only son Dr. Jaisooriya Naidu and two daughters who have already made their mark in their respective spheres. We offer them our sincerest condolence and pray for peace to the departed soul.

(Continued from page 259)

and after the dialysis. Sulphathiazole and sulphapyridine can also be dialysed by this process. From this it would appear that artificial kidney may be put into other uses, as more and more experience is gained. In cases of œdema more glucose can be added to extract more water from the blood. It is now possible to relieve a seriously uræmic patient of his uræmia in one dialysis which lasts from 5 to 10 hours, after which he will have several days respite, before the intoxication endangers his life again. During the interval the patient gets a chance for the improvement in the condition of his kidneys. It may be remarked here that artificial kidney has its use only in acute uræmia. In chronic nephritis it can be used if there is acute exacerbation of uræmia.

Below is reported a case as an illustration:

Case Report—A woman aged 67 was admitted with high fever, palpable gall bladder, jaundice and almost complete anuria. The small amount of urine contained much albumin, erythrocytes, leucocytes and casts. B. P. 150/60. Thus she was suffering from cholecystitis and acute glomerulonephritis. She was kept on sulphathiazole and the temperature gradually dropped. The urea concentration in her blood had risen to 396 mgms. per 100 c.c. on the seventh day. She was unconscious and snored the whole day long and had a very dry mouth. She was treated with artificial kidney. Eighty litres of blood flowed through it in 11½ hours and 60 gms. of urea were removed and the blood urea dropped from 396 mgms. to 121 mgms. per 100 c.c. The potassium content which had risen to 55 dropped to 19 mgms. per 100 c.c. The next day she was conscious and talked freely and made plans for the future. This patient was seen 7 months after doing excellently.

Other methods of overcoming uræmia are:

Venesection—300 to 600 c.c. of blood may be withdrawn and replaced by saline. This can be done only in robust patients and when the blood pressure is very high. As non-protein nitrogens appear to rise in the blood after this process, it has little use in uræmia excepting in conditions like eclampsia and acute left ventricular failure.

Crossed Blood Transfusion—Then there is another method of crossed blood transfusion. The artery of the patient is connected with the vein of a healthy man and *vice versa*. But this is hardly practicable, as no healthy man would consent to take up the poisons of a uræmic patient.

Lastly, the kidney transplantation. This has not yet reached the stage of practical value.

In conclusion, I would state that when the blood urea is 400 mgms. or above to 100 c.c. and the potassium content of the blood is high, and the alkali reserve low, we have in the artificial kidney the best and generally the only weapon of saving the life of a patient.

NOTES AND NEWS

IMPROVING NURSING TRAINING IN S. E. ASIA

Miss Olive Baggallay, Chief of the Nursing Section at WHO Geneva Headquarters, in December last left New Delhi for Europe after a round of visits to Asian centres where WHO is assisting in efforts to improve nursing training facilities.

Miss Baggallay was impressed by the possibilities for setting up in Delhi an all-round centre for training public health nurses, health visitors and hospital nurses on a much bigger scale than at present. WHO personnel and UNICEF supplies and equipment will be made available as soon as this scheme receives final Government approval. Miss Baggallay found that Delhi already possessed a good concentration of qualified instructors at the Nursing College, the Lady Reading Health Centre and the Najafgarh rural health centre where a WHO team is already in the field.

In Calcutta, Miss Baggallay discussed with Dr. C. K. Lakshmanan, Director of the All-India Institute of Hygiene & Public Health, the nursing training programme to form part of the international Maternal and Child Health Centre soon to be opened at the Institute with financial assistance from UNICEF.

In Burma where in the next few months an international staff of 5 nursing instructors, one social pædiatrician and 4 public health nurses will be launching training centres for nurses and child health workers in Rangoon and Mandalay, Miss Baggallay talked over this joint WHO-UNICEF project with the Burmese Government and with the first of the WHO nursing instructors who is already in Rangoon. Miss Baggallay reports that four rural hospitals are to receive immediate help.

The keynote of Miss Baggallay's impressions was that more and better training facilities were vitally necessary to counter the region-wide shortage of nurses which was crippling efforts to raise health standards especially in rural communities. Provision of additional certificate courses as well as diploma courses might help to raise nursing strength to the required level more rapidly. At present nursing was frequently but quite wrongly regarded as a menial profession, and the nurse's status must be raised if her services were to be of maximum value in hospitals as well as in urban and rural public health works—*WHO Press Release*.

CLINICS SET UP IN BUDDHIST TEMPLES IN THAILAND

Buddhist temples in villages and towns of Rajburi Province (Thailand) serve both as clinics and living accommodation for itinerant teams of medical workers launching large-scale yaws-control operations, according to reports from Dr. D. R. Huggins of Trinidad who is WHO Senior Adviser with the teams. The United Nations International Children's Emergency Fund (UNICEF) is paying for penicillin supplies, equipment

and international personnel for this project which is the first of its kind in Thailand. In seven months of operations, penicillin treatment given by the teams has arrested the infective stage of the disease in more than 11,000 cases.

Working from the village temples, the teams aim to examine the total population of the area. Those found suffering from yaws in the infective stage are told to come back on another day for treatment with penicillin. Two injections only have been found sufficient to clear up the symptoms of the disease which is estimated to affect some 200,000 people in Thailand.

From April 1st, 1951, the project's international staff will begin training a further 88 sanitary inspectors and 15 medical officers, so that yaws control operations may progressively be extended to cover affected areas in other parts of Thailand.—*WHO Press Release.*

INTERNATIONAL DENTAL CONGRESS

The XI International Dental Congress is to be held in London from July 19th to 26th, 1952.

Travel—Steamship passages from England are still in many cases difficult to obtain. Intending visitors from overseas are, therefore, strongly advised to book their passages without delay.

Accommodation—Owing to the varying dates of arrival and departure and other difficulties, the Congress Committee cannot undertake to arrange for the accommodation of visitors in London. It is recommended that such accommodation should be reserved when passages are being booked (using form H., if reservations are made with Messrs. Thos. Cook & Son Ltd.). Reservations must be made before 1st February, 1952, if disappointment is to be avoided.

Oral Hygiene Exhibition—A section of the Congress that will be of interest to many members of the profession is the public exhibition of Oral Hygiene, in which it is intended to show the progress of this important work by means of films, models and posters.

Any further particulars can be had from Mr. C. de Vere Green, Chairman of Publicity Committee, 13, Hill Street, London, W1, England.

VICTORY MEDAL FOR DIABETES

Dr. Elliott P. Joslin, who celebrated his 81st birthday last June, is known throughout the world as a distinguished veteran in the fight against diabetes. Just over two years ago, as part of his effort to educate diabetic patients in healthy living and to show them what proper care can do, he founded a Victory Medal to be presented to any person who is still free of all vascular disease after a quarter-century or more with proved diabetes. In the 24 months up to June 1, 1950, he had found 20 patients who passed this test, and last year he personally handed one medal to Dr. R. D. Lawrence, who for 20 years has led an active professional life as a consultant in diabetes and is said to have been one of the first people in Britain to receive insulin.

On behalf of the Advisory Committee of the Diabetes Fund of the Boston Safe Deposit and Trust Company, which holds and administers the Medal fund, Dr. Howard F. Root has now invited the Editor of the British Medical Journal to award a bronze Victory Medal in Britain. The medal, illustrated in Dr. Root's letter, has been designed by Amelia Peabody. It measures 2 inches across, and on the reverse side appear these words: "For life and health through perseverance and scientific medicine."—*Brit. M. J.*, **2**:827, 1950.

HEART DISEASE AS A CAUSE OF DEATH

According to the medical director of a large American life assurance company, heart disease continued to be the major cause of death among its policyholders during 1949. Diseases of the heart and circulatory system accounted for 56·8 per cent. of fatalities in all age groups, cancer for 15·8, and accidents for 45 per cent. Reporting this, the New York State Journal of Medicine states that the medical director attributed many of the heart disease fatalities to continued emotional maladjustment. He asserted: "Many of the people sacrificed to heart disease during the past year would have been alive to-day if they had been as considerate of themselves as they were of their automobiles."—*J. Roy Inst. Pub. Health & Hyg.*, **13**: 407, 1950.

MEDICAL CONFERENCES IN SOUTH AFRICA CANCELLED

Due to the insistence of the Government of South Africa that only persons of pure European descent will be allowed to enter South Africa as delegates to attend the joint Conference of the British Medical Association and the Medical Association of South Africa scheduled to be held in Johannesburg next July, the Council of the British Medical Association, with the concurrence of the Medical Association of South Africa, has cancelled this Conference.

For the same reason, the Commonwealth Medical Conference scheduled to be held in Johannesburg earlier in July has also been cancelled.

ALL-INDIA CONFERENCE OF DERMATOLOGISTS AND VENEREOLOGISTS

An All-India Conference of Dermatologists and Venereologists will be held at Calcutta on Saturday, the 14th April and Sunday, the 15th April 1951 under the presidency of Dr. A. C. Rebello of Bombay. Papers on scientific and clinical interest will be read. Demonstrations (clinical, microscopic etc.) will be arranged.

All communications should be sent to the Secretary at 15, Camac Street, Calcutta—16.

CENTRAL DRUG RESEARCH INSTITUTE LUCKNOW

While performing the opening ceremony of the Central Drug Research Institute at Lucknow in the

historic 200-year old 'Chhattar Manzil' on 17th February, the Prime Minister Sri Jawaharlal Nehru stressed the desirability of drug research on scientific basis which is essential for checking quackery and superstition.

The newly opened Institute is the eighth link in the chain of eleven laboratories to be opened by the Council of Scientific and Industrial Research.

The function was held on the spacious lawns of the institute. The U.P. Governor, Sri Modi, presided and Sri Sri Prakasa, Dr. S. S. Bhatnagar, Pandit Pant, Shrimati Amrit Kaur, Sri C. B. Gupta, U.P.'s Health Minister, Sir Edward Mellanby, Director of the Institute, and Col. R. N. Chopra, Director of the Drug Research Laboratory, Jammu, spoke before Sri Nehru addressed the gathering. On the dais was Dr. C. V. Raman.

Nehru said, drug research was vital to stamp out quackery and superstition, to make India independent of imports in drugs, and also to investigate and preserve India's valuable contribution to medicine while at the same time discarding those drugs which were spurious and dangerous though time-honoured. More than that, Nehru added, these national laboratories would and should make people more and more scientific in outlook—detached, dispassionate and not swept away by prejudices and passions.

"I do think drug research on a scientific basis is necessary in our country because we have amidst us too much of quackery under noble sounding words and it is a dangerous thing" said Nehru.

Nehru said even saving anybody by quackery was a dangerous thing as it spread an atmosphere which was inimical to human progress.

The Prime Minister said, though he was opposed to quackery he wanted intensive research on the efficacy of household remedies that had come down to us from generations. The problem if approached with a scientific frame of mind might yield good results. The people should be prepared to discard things of the past which were found to be useless.

Pandit Pant said the fabric of civilization rested on the twin pillars of science and technology. "While we are starting a new career in free India it is but proper that science should receive our utmost consideration," he added.

Dr. Bhatnagar thanked the U.P. Government for placing the Chhattar Manzil at the disposal of the Institute. One of the essential functions of the Institute would be to investigate into the efficacy of medicines.

Mr. C. B. Gupta said, drug imports in India had reached the "staggering" figure of about Rs. 8 crores in 1949. It was, therefore, high time we manufactured "our own needs" instead of depending on other countries.

Mr. Gupta appealed to the scientists of the Institute to continue their research in indigenous system of medicine so that anything found good in them may be utilized for giving relief to the suffering.

Sir Edward Mellanby, Director of the Institute and an eminent scientist of the U.K., speaking on the work and objects of the Institute said:

"So far as the health of the country is concerned, drugs form the second line of defence. The first line must always be the public health services, which ensure or ought to ensure effective sanitation and drainage, pure and abundant water supplies, a sufficiency of food of good nutritional quality and a high standard of personal hygiene. When these are assured, drugs, the second line of defence, although still of great importance, are not such a pressing necessity to a community. When the first line of defence is undeveloped, the need for the strengthening of the second line becomes more imperative. It is clear from the high incidence of infective disease in India that much remains to be done in developing public health services and raising the standard of personal hygiene. Until this happens, the country will continue to be devastated by epidemic and endemic diseases such as malaria, small-pox, dysentery, cholera, plague, typhoid and typhus fevers. The control and ultimate elimination of these killing diseases will depend on the determined and long continued action of public health authorities working in association with an enlightened public under the best political, social and scientific leadership.

"It is true we have now methods of curing and preventing some of these diseases, but such drugs, while of great benefit to individuals, will continue to fight a losing battle against wide-spread epidemics until they work in conjunction with the methods used by a strong public health administration. The present knowledge of preventing many of these diseases is already available, although it is probable that further research and investigation may well bring to light for use in India better and simpler methods than are commonly used in western countries. It would be doing a disservice to the country if I did not make it clear that drugs, miraculous and life-saving as are many of their actions, are only secondary to public and personal question of health. This is one reason why drugs are of such pressing importance to India.

"Another reason for the special interest in drugs in India is the fact that, although there is a great importation of these substances into the country from foreign countries, many of them are made from plants which grow well here. It is an astonishing fact that whereas a large part of the plants, from which official drugs in the pharmacopœa are made, are already grown in this country, yet many of these drugs are imported in large quantities. From a national angle, this is sheer economic waste, and obviously an effort must be made to replace many of the imported drugs by products here. This again is a problem which demands action rather than discovery, and it will be one of the objects of this Institute by giving technical advice, by emphasizing the urgency to encourage the large-scale growth and the processing of plants, and where necessary of finding new sources of well-known drugs to make India as rapidly as possible self-supporting in those remedies which she can readily produce from her own natural resources.

"Another part of the work of the Institute will be to submit to scientific tests many of the plant products, which tradition has brought into long and extensive use in Indian medicine. There is evidently wide-spread belief in India that much valuable knowledge is contained in the old indigenous treatment in India and that investigation by modern methods will prove that this is true. Some of these remedies will now be put on their trial. If they are found to be valuable, they will find an established place in modern medical treatment.

Srimati Amrit Kaur, Health Minister, speaking on the occasion said:

"Our indigenous systems of medicine have a rich store of valuable drugs which our ancestors discovered in the past. Some amount of work on these drugs has been done for the past 25 or 30 years but here is a large field of study of which only the fringe has so far been touched.

"It is necessary to control the standards of production of all drugs placed on the market, whether they be imported drugs or those which are locally manufactured. In order to control the practice of pharmacy, the Pharmacy Act was passed in 1948. An Indian Pharmacopœia is at present under compilation and it will provide proper standards for many of the indigenous drugs in use in India."

Col. R. N. Chopra Director of the Drug Research Laboratory, Jammu, said: "This is a great day for drug research in India. With the opening of this Institute, drug research will be put on a sound, systematic and permanent basis. Research on this important aspect of medicine, so far, has been sporadic, unorganized and haphazard.

DR. B. MUKHERJI APPOINTED DIRECTOR OF DRUG RESEARCH INSTITUTE

Dr. B. Mukherji at present Director of the Central Drugs Laboratory at Calcutta, has been appointed Director of the Central Drug Research Institute at Lucknow which was opened at Lucknow on 17th February, 1951, by the Prime Minister.

BENGAL DRUGS RULES AMENDMENT

The Medical and Public Health Department of the Government of West Bengal informs that in exercise of the powers conferred by Section 33 of the Drugs Act, 1940 (XXII of 1940), the Governor has made the following further amendment in the Bengal Drugs Rules, 1946:

In schedule G to the said rules, to the entry beginning with the word "Para-aminobenzene—sulphonamide" and ending with the words "their salts", the following is to be added, namely:—

"But excluding preparations and dressings containing these for external use".

MASS RADIOGRAPH IN SURVEY OF TUBERCULOSIS

The Madras Government are conducting a tuberculosis survey of the citizens of Madras with the aid of the mass radiograph. The survey which began with the workers of Messrs. Simpson and Company will be gradually extended to other factories and important industrial institutions. The survey of all the citizens living in Madras City is computed to take nearly two years.

The mass radiograph takes more than 150 X-ray pictures an hour. It will be possible to find out from these pictures whether a person has tuberculosis and, if so, in what stage.

Although a picture taken in the radiograph is just about the size of a cinema film, it can be enlarged. If tuberculosis is suspected immediate medical attention is given. Larger pictures of suspected cases are to be taken and re-examined. The cost of production of each picture is stated to be just two annas. The mass radiograph costs about Rs. 1,20,000.—*Globe.*

B. C. G. VACCINATION CAMPAIGN IN MADHYA PRADESH

Dr. Galatins from Denmark together with two Danish instructing sisters arrived at Nagpur to help initiate the anti-tuberculosis vaccination programme.

Dr. Galatins' first task will be to assist the Government in training three doctors and health visitors who will conduct the testing and vaccination in different districts.

On and from January 31st the State of Madhya Pradesh became a participant in the B. C. G. vaccination programme which is a joint effort of U.N.I.C.E.F. (United Nations International Children's Emergency Fund), and Scandinavian Red Cross and relief organizations, with the technical assistance of the World Health Organization. In this State 30,000 persons die each year of tuberculosis and an even greater number are incapacitated annually.

The campaign specially calls for testing and vaccination of all children and adolescents between the ages of 1 year and 20 years. Vaccination is being carried out in schools, and at Mayo Hospital where a B. C. G. clinic opened from 26th February last.

The first consignment of purified tuberculin 1200 c.c. and B. C. G. vaccine 800 c.c. despatched from the King Institute, Guindy, Madras, arrived by a Deccan Airways Dakota at Nagpur on 19th February.

The boxes containing tuberculin and vaccine were received at the Sonegaon airport by Dr. Galatins, leader of the Scandinavian Team on behalf of the International Tuberculosis Campaign B. C. G. team. Also present at the airport to receive the first consignment were Dr. M. L. Raje on behalf of the Madhya Pradesh Government, B. C. G. team, Dr. V. S. Kaundaniya of Nagpur T. B. Clinic and Dr. Subramaniam, Deputy Director of Health Services Madhya Pradesh.—*The Leader and Nagpur Times.*

CURRENT MEDICAL LITERATURE

The Two-step Exercise Electrocardiogram

Master (*Ann. Int. Med.*, **32**:842, 1950) gives in the following lines the summary of his observations on the two-step exercise electrocardiogram as a test of coronary insufficiency:

The diagnosis of heart disease is often complicated by the fact that objective evidence of organic disease cannot be obtained. Physiologically, electrocardiographic indications of coronary insufficiency are more likely to become evident in tracings made following exercise than in those made when the patient is resting.

The "2-step" exercise test obtains the response of the heart to effort and the status of the coronary circulation can be determined by this exercise electrocardiogram.

The "2-step" exercise test is a simple procedure. The accustomed nature of the work allays apprehension or excitement.

The exertion must be standardized and tables must give the number of climbs for age, weight and sex. The exercise electrocardiogram does not reflect the result of previous physical training. It is a reliable gauge of cardiac function only if the standardized exercise is carried out with exactitude.

Depression of the RS-T segment of over 0·5 mm. in any lead below the isoelectric level is considered a positive result. A change from an upright T-wave to an isoelectric (flat) or inverted T-wave is also an abnormal response except Lead III.

The "2-step" exercise test is chiefly of value when the resting electrocardiogram is normal. If the resting tracing is abnormal the exercise test is unnecessary.

Patients are not fatigued by the "2-step" exercise. It is not the purpose of the "2-step" test to induce angina but the electrocardiographic changes are the same whether or not pain or pressure occurs during exercise. The electrocardiographic alterations are similar to those seen in a spontaneous attack of angina pectoris.

The alterations in the electrocardiogram are not produced by hyperventilation. Hyperventilation does not ordinarily appear following the "2-step" effort.

Coronary insufficiency is practically excluded if two tests are negative, a standard and then a double "2-step". The latter consists of a continuation of the climbs for another minute and a half.

Coronary insufficiency exists if the electrocardiogram following the "2-step" exercise is positive. However, it is not necessarily a sign of organic heart disease; the insufficiency may be functional. Extreme mental or emotional tension may produce a positive "2-step" electrocardiogram. In the majority of cases the differential diagnosis is not too difficult.

In a patient with anginal syndrome exercise tolerance may be the only objective evidence of myocardial impairment. The malingerer has a normal "2-step" exercise electrocardiogram.

The "2-step" exercise, short and simple as it is, is useful in yearly examination. It should prove of value in the examination of potential pilots or in the regular examination of experienced pilots.

The "2-step" exercise test lends itself to the field of investigation.

Certain extracardiac factors influence the electrocardiogram and must be taken into account.

The electrocardiogram in the 10 per cent oxygen test, if it reveals deviations from the normal, is similar to that in the "2-step" exercise. In such cases the physiological effect of the "2-step" exercise is to take one to an altitude of 18,000 feet for a moment or two.

The chest lead is probably more frequently positive than any of the standard limb leads and the deviations in this lead are larger quantitatively, as a rule.

RS-T depressions (very rarely RS-T elevations) are observed in patients with coronary insufficiency. The depressions result because the subendocardial region of the heart is more susceptible to anoxemia than the subepicardial. By depression is meant a lowering of the RS-T segment below the baseline, *i.e.*, the P-Q or P-R interval.

Plasma Protein Levels in Different Diseases

Gokhale and Chitre (*Indian J. Med. Sc.*, **4**:398, 401 & 407, 1951) report on the studies of plasma protein levels in nutritional œdema, in different types of Bright's disease and in cirrhosis of the liver.

Twenty cases of nutritional œdema were studied for the levels of plasma proteins. The mean levels with standard error of the mean in gm. per 100 cc. plasma were: Total protein 4·17 ± 0·20; albumin 1·53 ± 0·18; globulin 2·98 ± 0·33.

The regeneration of total protein and albumin was significantly retarded and that of globulin significantly elevated when compared with that of healthy Indian subjects.

The type of nutritional œdema as described by Keys *et al* and Denz arising out of famine diet in Europe is also encountered in some cases in India.

Gokhale and Chitre, (*Ibid*, 401) write:

Twenty-five cases suffering from some type of Bright's Disease were investigated. The mean levels of plasma proteins in this disease with standard error of the mean were: Total protein 5·03 ± 0·21; albumin 2·34 ± 0·24; globulin 2·84 ± 0·20.

Blood non-protein nitrogen and blood cholesterol had no relation with the levels of plasma proteins in this disease.

Improvements and deaths confirmed the prognostic levels suggested by Van Slyke for total protein 5·5 and albumin 2·2 gm. per 100 cc. plasma.

Improved cases having albumin values below 2·2 gm. per 100 cc. plasma had globulin values above 3·24 gm. and total protein values above 5·5 gm. per 100 cc. plasma.

Plasma albumin values vary inversely as the quantity of albumin passed in urine.

Gokhale and Chitre, (*Ibid*, 407) write:

Thirty-eight bed-ridden, advanced cases of cirrhosis of liver were investigated for plasma protein regeneration by Howe's method. Mean plasma protein levels in gm. per 100 cc. with standard error of the mean were: Total protein 5·20 ± 0·19; albumin 1·53 ± 0·15; globulin 3·98 ± 0·27.

Total protein and albumin mean values were significantly lower and globulin mean values were significantly higher than the mean values of healthy Indian subjects.

Regeneration of globulin is generally increased in this syndrome, and gives globulin values above 2·8 gm. per 100 cc. plasma.

In cirrhosis of liver, liver goes out of balance and regenerates more globulin than albumin.

Present Status of Cortisone and A.C.T.H.

Hench (*Brit. M. J.*, **2**:942, 1950) in two lectures delivered recently in London describing the action of cortisone as used by himself and his colleagues (Drs. E. C. Kendall, C. H. Slocumb, and Howard F. Polley) said that the hormone did not kill any micro-organism or remove any unknown irritant; what it did was to provide susceptible tissues with a shield-like buffer. It did not, so to speak, put out the fire nor even repair the fire damage, but it did provide a kind of asbestos suit by which the patient was proetcted. When the suit was removed prematurelly the tissues were again subjected to the flame. But once the inflammation was suppressed it could remain suppressed by simple maintenance doses.

Individual tolerance to cortisone and A.C.T.H., said Dr. Hench, varied greatly. Males tolerated the hormone better than females, especially adolescent and menopausal females. Such effects as acneiform eruptions or "round face" might be endured temporarily in view of the need of the patient. Fairly common side-effects were minor alterations of psyche, restlessness, and insomnia. Occasional ones were retention of fluid, hypertrichosis, folliculitis, and transient amenorrhœa. More rare were hypoglycæmic alkalosis, altered libido, retrocervical fat ("buffalo hump") and increased blood pressure. Spontaneous fractures were rare. There were now more than 3,000 rheumatoid patients in the United States who had received cortisone, and he knew of only four cases of spontaneous fracture in elderly osteoporotic persons. To prevent adverse effects, if prolonged administration was necessary after initial suppressive doses, only the smallest effective maintenance dose should be used. The administrator should be content to suppress symptoms and not necessarily to reduce sedimentation rates.

Some 50 steroids, said Dr. Hench, had been studied with a view to finding substitutes for cortisone. These were all more or less related to cortisone, but apart from "compound F" (which had not yet been synthesized, so far as he knew, though it probably would be in the near future) none of them produced significant effects. Dr. Hench added that cortisone was now priced at 50 dollars a gramme. Supplies were now sufficient to make cortisone available in limited amounts to all approved American hospitals, with growing supplies for foreign medical centres. He had recently seen the first specimen of A.C.T.H. from the pituitary of the Norwegian whale.

In May, 1949, a special preparation—a mixture of compound E and compound F—was given to a severely rheumatoid patient by mouth, and the patient became symptom-free. From this and certain animal experiments it was concluded that cortisone was effective when given by mouth. Cortisone tablets had since been given by Dr. Richard Freyberg, of New York, and Dr. Hench and his associates in 25 rheumatoid cases, with satisfactory results. To their pleasant surprise they found that no larger quantity was needed than when given by intramuscular injection.

After describing the effects of cortisone on rheumatoid arthritis, Dr. Hench turned to some other conditions. Renal lesions were usually not affected, though temporary remission might be afforded. A few cases of chronic ulcerative colitis had been treated; in one of them—arthritis also being present—cortisone was given for 35 days; it brought about complete articular remission, with symptomatic remission of the colitis, which remission had continued for seven months or more after the end of the treatment. Cases of pulmonary tuberculosis had been treated, with subjective improvement, reduction of sedimentation rates, and improvement of x-ray picture of the lungs in some but not in other cases. In cases of tubercular arthritis the sedimentation rates had decreased and the articular symptoms cleared up. But because of the possible inhibiting effect of cortisone and A.C.T.H. on fibroblasts these hormones should be used only as an investigative procedure in the presence of tuberculosis.

A few patients with osteoarthritis had been treated (cortisone was so precious that it was not considered advisable to use it on a relatively benign disease), and considerable relief had been obtained in about half. Cases of acute gouty arthritis had been relieved, sometimes after a single large dose. Remissions in cases of asthma had lasted from one week to five months after discontinuance of the hormone. One important use was in inflammatory diseases of the eye—subacute uveitis, iridocyclitis, and other conditions.

Dr. Hench ended his lecture by saying that, although some of the clinical effects recorded were non-specific, the ability of the hormone to influence markedly a disease process, or even to reverse it, appeared to be group-specific. These hormones had furnished a powerful weapon with which to investigate many problems relating to the ætiology and treatment of a wide variety of diseases. Research workers were at the beginning rather than the end of the road.

Pharmacological Action of Antihistamine Compounds

Burn (*Brit. M. J.* **2**:692, 1950) writes:

Many substances used medicinally as local anæsthetics (*e.g.*, cocaine, procaine and amethocaine), as analgesics (*e.g.*, pethidine), and as spasmolytics (*e.g.*, atropine, papaverine, trasentine and 'syntropan') have common properties, among which is included the ability to act like quinidine on the heart. Antihistamine compounds also belong to this large group of drugs. The side-effects they produce are, therefore, to be expected. They can also be used for other purposes—as local anæsthetics, as quinidine substitutes for fibrillation, as quinine substitutes for myotonia, for travel sickness, and to relieve pain. Similarly, local anæsthetics such as procaine, or analgesics such as pethidine, have an antihistamine action which is considerable.

The basis of these common properties is that the substances which possess them depress the effects of acetylcholine, histamine, and adrenaline; these substances control activity locally in many tissues.

Mineral Deficiencies

Youmans (*J.A.M.A.*, **148**:1252, 1950) writes that *iron* deficiency, the most common nutritional deficiency, is rarely the result of inadequate iron intake. It is the result of loss of iron (*a*) by bleeding, (*b*) in the female by transfer of

iron to the fœtus, and (*c*) in the child by failure to receive an adequate supply of iron at birth. Iron deficiency anæmia is usually the result of some other disease or occurrence and requires specific treatment with pharmaceutical iron and can not be relieved simply by diet. *Calcium* deficiency in adults, osteomalacia, is largely confined to pregnant women or those who have had many pregnancies. Other calcium deficiencies in adults occur in sprue due to losses in the stool of calcium bound to the unabsorbed fat, and in patients with hypoparathyroidism. Calcium deficiency in children is so interrelated with vitamin D deficiency that to some extent both are considered a single disease; it is unlikely that vitamin D shortage often occurs in adults. Factors affecting calcium absorption are: (*a*) proportions of calcium and phosphorus in the diet, (*b*) availability of dietary calcium, (*c*) acid-base reaction of the diet and the presence or absence of hydrochloric acid in the stomach, (*d*) factors other than vitamin D, and (*e*) factors affecting the general metabolism, such as pregnancy, lactation, and disturbances in hormone regulation. Senile calcium demineralization may be the result of chronic illness and endocrine disorders rather than an actual calcium deficiency. *Iodine* lack may result in goiter and/or hypofunction of the thyroid gland. Both or either of these conditions may be present when iodine is lacking, but when hypothyroidism is due to iodine deficiency, it is usually accompanied by a goiter. Goiter can exist without any interference with body function while hypothyroidism affects growth and activity of all tissues. Mass prevention of iodine deficiency, through the use of iodized salt, is easy and highly successful. General hygiene and diet should also be considered in the prevention of goiter. There is an advantage in using fresh vegetables but the goitrogenic action of some such as cabbage and related vegetables, must be considered.

Abdominal Angina

Discussion of intra-abdominal vascular disease is usually limited to a consideration of massive mesenteric thrombosis or embolism with extensive infarction of the bowel. But there is evidence that abdominal pain or angina, comparable to cardiac angina or to claudication of the extremities, may accompany arteriosclerosis in the mesenteric vessels. It may also be possible that small infarction of the intestine may heal without perforation if the terminal arterioles only are affected. Dunphy (*Am. J. Med. Sc.*, **192**:109, 1936) reported that 7 out of 12 patients fatally ill with massive mesenteric thrombosis gave a history of repeated attacks of abdominal pain, previously undiagnosed, preceding the fatal attack by months or years. Cushman and his co-workers (*Ann. Surg.*, **114**:672, 1941) described a patient who was treated for mesenteric thrombosis and died from another cause six months later. Necropsy revealed a healed infarct of the ileum. The Massachusetts General Hospital has reported the case-history of a patient subject to recurrent attacks of abdominal pain who had had two negative laparotomies and was then found to have gross arteriosclerosis of the mesenteric vessels and a fresh occlusion of the superior mesenteric artery (*New Eng. J. Med.*, **240**:262, 1949). Berman and Russo (*Ibid.*, **242**:611, 1950) have described the findings in a patient in whom abdominal pain was thought to be due to abdominal angina. This patient, a woman of 72, had had cramplike pain for four weeks more severe in the left side of the abdomen. For one week the pain was almost periodic, coming on two hours after eating. It was worse after large meals. The bowels were normal, and no melaena had occurred. A laparotomy was performed because of increasing pain and tenderness, and a moderate amount of serosanguineous fluid was found in the peritoneal cavity, together with numerous fine, flame-shaped hæmorrhages in the mesentery of the middle part of the jejunum adjacent to the bowels. In the centre of this area there was a partially organized infarcted area (about 5 cm. in length) of the small bowel, with dimpling and contraction of the serosa. Peristaltic waves passed through this area, and it was decided to close the abdomen. Subsequently, by avoiding large meals, she had only occasional episodes of abdominal colic. Unexplained abdominal pain in the elderly is a not uncommon clinical problem, and a vascular cause should be included in the differential diagnosis. Berman and Russo consider the pain—"abdominal angina"—may arise from ischæmia associated with arteriosclerosis without infarction, but it is perhaps more probable that minor degrees of infarction are the cause of the more prominent symptoms.—*Brit. M. J.*, **2**:771, 1950.

Disorders in Water and Electrolyte Metabolism in Diabetic Coma

Plattner (*Helv. Med. Acta*, **16**:77, 1949, Ref. *Am. J. Digest Dis.*, **17**:213, 1950) writes:

This important work illustrated with 40 tables and figures, opens with a review of modern knowledge concerning the composition of body fluids. It is shown that the extracellular and intracellular dehydration of diabetic coma with loss of water and electrolytes, particularly Cl, Na and K, is responsible for the circulatory collapse and partially responsible for the diabetic nephritis. Loss of potassium produces circulatory, respiratory and nervous effects. Hypopotassemia seems to result from insulin treatment, which mobilizes the potassium and dilutes the blood, since hypopotassemia does not occur during coma untreated, but only 10 to 20 hours after the beginning of insulin therapy. Following adequate doses of insulin, re-hydration is the most important feature in the treatment of diabetic coma. The loss of water and electrolytes mentioned *via* the urine, through vomiting, hyperventilation and anorexia, must be corrected by large amounts of fluid. Diabetic coma may call for as much as 5 to 13 liters of water and 21 to 45 gms. NaCl, in all, for complete recovery. On the first day as much as 4 or 5 liters of saline may be needed. Administration of potassium is logical, but should be given only by the mouth, and reserved for those cases who cannot quickly resume their diet or who show symptoms of hypopotassæmia.

Sulphonamides and Sulphones

Certain amount of confusion often arises between the two classes of drugs, the sulphonamides and the sulphones. The question often arises amongst the medical men, 'what are the points of similarity and dissimilarity between these two classes of chemotherapeutic agents'. A sulphonamide is the amide of the corresponding sulphonic acid. It may be represented by the general formula $R.SO_2NH_2$ where R is any organic radical like CH_3 (methyl), C_2H_5 (ethyl), C_6H_5 (phenyl), etc. The simplest of the chemotherapeutically active sulphonamide and the parent substance of this group of drugs is para-

aminobenzenesulphonamide or sulphanilamide (I). The more popular sulphonamides such as sulphapyridine, sulphathiazole, sulphadiazine and sulphaguanidine are produced by replacing one of the H atoms attached to N of SO_2NH_2 by 2-pyridyl, 2-thiazolyl, 2-pyrimidyl and guanidyl radicals respectively.

The sulphones have the general formula $R.SO_2R'$, where R and R' are either similar or different organic radicals. The parent drug of the sulphone group is 4, 4'-diaminodiphenylsulphone (II). The common drugs of the sulphone group, *e.g.*, Promin, Diasone or Diamidin, Sulphetrone or Novotrone, etc., are mostly derivatives of the two N atoms. It is interesting to mention in this connection that the well-known hypnotic drug Sulphonal, $(CH_3)_2C(O_2C_2H_5)_2$, is also a member of the sulphone group from the chemical standpoint. Ed. *Indian M. Gaz.*, **85**:506, 1950.

Penicillin Vaginal Suppositories

Turner (*Am. J. Obstet. & Gynec.*, **60**:806, 1950) writes: A cocoa-butter suppository containing 100,000 units of crystalline potassium penicillin G was inserted vaginally from twelve to fourteen hours prior to operation in one hundred consecutive, non-selected vaginal hysterectomies.

According to the usual standard of morbidity as outlined by the American College of Surgeons, this series had a 7 per cent morbidity in contrast to the reported morbidities which vary from 26 to 42 per cent.

With employment of the same pre-operative preparation prior to the use of the penicillin suppository, the morbidity in fifty-six personal vaginal hysterectomies was 37·5 per cent and in a control series of two hundred ten cases the morbidity rate was 34·8 per cent.

The bacteriologic and clinical studies support the belief that penicillin vaginal suppositories are of value in reducing morbidity when employed as an adjunct in pre-operative preparation in vaginal hysterectomy.

Study of 100 Cases of Threatened Abortion

Crowder and others (*Am. J. Obstet. & Gynec.*, **60**:896, 1950) reports on a study of the therapy of 100 cases of threatened abortion treated by one of two routines of therapy: (1) Bed rest and sedation, (2) Bed rest, sedation and stilbestrol. The study indicates that stilbestrol therapy, in large doses, results in no increase in salvage rate of threatened abortion over bed rest and sedation alone.

Congenital Tuberculosis

Burges (*North Carolina M. J.*, **11**:239, 1950, Ref. *J.A.M.A.*, **114**:205, 1950) reports a woman, aged 26, whose seventh pregnancy was uncomplicated until three weeks before delivery, when she developed pain in the lower abdomen. Her mother had died from tuberculosis four years previously and one sister was still ill with the disease. The woman was delivered of a premature infant, who at the time of delivery had respiratory difficulty and a distended abdomen. The placenta showed numerous nodular white or greyish yellow lesions. Acid-fast organisms were found within the cytoplasm of the large mononuclear cells of these nodules. Microscopic study revealed small focal lesions. These areas were abscess-

(*Concluded at foot of column 2*)

CORRESPONDENCE

(The Editor is not responsible for any views expressed by contributors)

XXVII ALL-INDIA MEDICAL CONFERENCE, SHOLAPUR

Sir,—I wish to draw your attention to an omission in the first article of the Journal (February '51 issue, page 174, second paragraph), in the item on the Scientific Exhibition held at the XXVII All-India Medical Conference, Sholapur, which reads as follows:

"The Exhibition containing 35 stalls one of which exhibited interesting pathological specimens and radiographs 'mostly from Dhanarajgirji Hospital' was beautifully laid out" etc. etc.

As a matter of fact, another sister institution of equal reputation, *viz.*, N. M. Wadia Hospital, Sholapur, had contributed also to the scientific exhibition and so also had the Civil Hospital.—I am, etc.

R. B. Karkhanis, M.S.,
Hony. Organising Secretary,
XXVII, All-India Medical Conference.

Sholapur,
21.2.51.

DOCTORS' DRESS

Sir,—The controversy on Doctors' Dress has been going on for long. I think it is high time that it should be dropped—I mean the controversy and not the dress. On second thought I wonder whether discarding the latter might end the controversy or only raise fresh issues.—I am, etc.,

15, Elgin Road,
Calcutta.
2. 2. 51.

A. C. Banerjee

N.B.—No further correspondence regarding Doctors' Dress will be published in the Journal.—Editor, *J. Indian M. A.*

(*Continued from column 1*)

like and revealed large numbers of acid-fast bacilli. The mother's course was stormy. Physical examination of the chest was negative until the seventh postpartum day, when occasional dry rales were heard. On the ninth day roentgen examination of the chest showed a soft, mottled infiltration extending from the apex to the base bilaterally. The process seemed to be fresh and was thought to represent a miliary infection. A smear of material taken from the uterus on the eleventh day was negative for tubercle bacilli, but guinea pig inoculation was positive. After a progressively downhill course, with increasing delirium, the mother expired on the twelfth hospital day. Autopsy revealed pulmonary tuberculosis with generalized disseminated tubercle found in the endocardium, kidneys, brain, meninges, endometrium and myometrium. The infant lived only five hours. The postmortem revealed acute congenital disseminated tuberculosis involving the liver, lungs, spleen, mesenteric mediastinal and hilar nodes and the kidneys.

SUPPLEMENT
Journal of the Indian Medical Association

VOL. XX, No. 7 CALCUTTA APRIL, 1951

I RAJPUTANA MEDICAL CONFERENCE—The first Rajputana Medical Conference was held at Jaipur on 26th, 27th and 28th March, 1950, Hon'ble Rao Raja Hanut Singhji, Health Minister, Government of Rajasthan, presiding. It was inaugurated by Dr. C. F. Chellappan, Deputy Regional Director, World Health Organization for South East Asia.

While opening the Conference Dr. Chellappan discussed at large the scheme of W.H.O. to combat Tuberculosis. He said that tuberculosis was a world-wide problem and that it claimed approximately 5 million lives a year.

For meeting the tuberculosis menace Dr. Chellappan suggested a survey of the needs, resources as also the attitude of the people of the country by an expert provided by W.H.O. In each country, he said, there should be a central laboratory with ramification of branches all over. He also suggested in this connection the setting up of a simple record system in the central control office, the establishment of a home nursing service and provision of hospital facilities.

B.C.G. vaccination, he said, was the only practical way known so far of producing specific resistance against tuberculosis but the method by itself could not be expected to control the disease. It should be carried out as part of a general programme of control. Emphasis should be placed on the training of personnel and demonstration of the methods of work.

DR. R. M. KASLIWAL, M.D., M.R.C.P. (LOND.), D.T.M. & H,
President, Rajputana Medical Conference, Jaipur.

The inauguration was preceded by a welcome address by Col. G. B. Singh, President of the Jaipur Branch of the I.M.A. and Chairman of the Reception Committee who gave an account of the history of the development and organisation of the Rajputana Provincial Branch of the I.M.A., and discussed the part the Indian Medical Association had been playing in serving the public and the Government at various occasions.

An exhibition of medical and allied products of several pharmaceutical concerns of India was arranged at the Sawai Man Singh Medical College.

The conference lasted for 3 days and its programme included a long clinical session in which talks on various interesting subjects were given as shown below:—

1. Dr. G. M. Castairs, Ajmer—"The Psychology and Village Medical Practice".

2. Dr. S. C. Mehta, Jaipur—'Abdominal Emergencies on right side".

3. Dr. B. N. Consul, Jaipur—"Binocular Single Vision and Orthoptics".

4. Dr. D. G. Ojha, Udaipur—"Thoracoplasty Under Local Anaesthesia".

5. Dr. H. S. Andeleigh, Jaipur—"Mycotic Infection of the Lung".

6. Dr. P. D. Mathur, Jaipur—"Transurethral Prostatectomy".

7. Dr. R. N. Sachdev, Jaipur—"A New Antibiotic".

8. Dr. B. S. Sharma, Jodhpur—"Radiological Appearances in Pulmonary Tuberculosis".

9. Dr. S. M. Consul, Jaipur—"Health".

10. Dr. C. H. Primlani, Ajmer—"Artificial Kidney".

11. Dr. R. B. L. Arora, Jaipur—"Pharmacological actions and absorption and Excretion of Nicotinic Acid.

On 26th March evening the members of the Jaipur Medical Association were at home with the guests, and this was attended by a large number of high officials and ministers of the Government of Rajasthan and prominent citizens of Jaipur.

On 27th March, Scientific films were demonstrated in the evening and a general meeting of the Rajputana Provincial Branch was held at 7 P.M. with the retiring President Dr. M. K. Sarda of Ajmer in the chair. The Hony. Secy. Dr. Tara Shankar presented the report of the past year which was adopted. The statement of account was then put before the house by the Hony. Treasurer Dr. G. C. Singh and was adopted. In all, six resolutions were moved, discussed and passed.

Dr. B. M. Kothari, Hony. Secretary, Jodhpur Branch then extended the invitation on behalf of the Jodhpur Medical Association to call the second session of the Rajputana Medical

Conference at Jodhpur. The invitation was thankfully accepted.

The election of the office-bearers for the next year was then done and the following were elected to the Executive Council:—

1. Dr. R. M. Kasliwal, Inspector General of Hospitals and Director of Public Health, Rajasthan Government, Jaipur—*President.* 2. Dr. S. K. Menon, Bikaner—*Vice President.* 3. Dr. J. N. Madan, Jodhpur—*Vice-President.* 4. Dr. C. H. Primlani, Ajmer—*Vice-President.* 5. Dr. Tara Shankar, Jaipur—*Hony. Provincial Secretary.* 6. Dr. B. M. Kothari, Jodhpur—*Hony. Joint Secretary.* 7. H. S. Andeleigh, Jaipur—*Hony. Joint Secretary.* 8. Dr. Rajendra Verma, Kotah—Hony. Joint Secretary. 9. Dr. Jagdish Nath Mathur, Alwar—*Auditor.*

Dr. M. K. Sarda, the retiring President, then thanked the members for the trouble they took in attending the Conference and for their sincere cooperation and good wishes in making it a success. He very much appreciated the services of the Hony. Secretary, Dr. Tara Shankar Mathur, and thanked him for all that he had done to develop this provincial branch and to set the ball rolling by managing the first Rajputana Medical Conference.

The Hony. Secretary then proposed a vote of thanks to the outgoing President for his valuable guidance and keen interest in the progress of this infant institution and requested Col. R. M. Kasliwal, the President-elect, to assume the chair and address the house. Col. Kasliwal while taking over the charge of the association thanked the house for selecting him to the office of President and assured his best care and service to the cause of the Indian Medical Association.

At 9 P.M. the Jaipur Medical Association gave a grand dinner to the members of the Conference which was followed by a musical entertainment. Thus after 3 days' busy programme the Conference was concluded.

Resolutions—In a resolution adopted in the Conference the Government of Rajasthan was requested to give suitable representation to the Rajasthan Medical Association in all Government and semi-Government local and municipal bodies connected with medical and health matters.

In another it recommended to the Government of Rajasthan that certain essential poisonous drugs should be available only on the prescription of a registered, qualified medical practitioner.

It urged the Government of Rajasthan and the authorities of the Rajputana University to give proper facilities and opportunities to the licentiates to undergo a short condensed course for the M.B.B.S. degree at the Jaipur Medical College.

In another resolution it urged for allotting a seat in the Legislature for the medical profession.

It also recommended to the Rajasthan Government to set up at once the Medical Council in Rajasthan as in all other States of India.

In another resolution it recommended formation of mobile units for rural medical relief.

II ASSAM MEDICAL CONFERENCE—The following are the short proceedings of the Second Assam Provincial Medical Conference, I.M.A., held at Jorhat on the 26th and 27th October, 1950:

Introductory Note—In the Conference 196 members of the medical profession as delegates and visitors and about 1,000 ladies and gentlemen were present amongst whom were Dr. Subodh Chandra Dutta, M.B., F.R.C.S., of Calcutta, Dr. H. K. Das, Ex-president, Sjt. Debeswar Sarmah, Ex-president, Assam Congress Committee, Sjt. Kuladhar Chaliha M.P., and others.

Dr. M. N. Sarmah after giving an introductory speech requested Dr. Subodh Chandra Dutta to inaugurate the Conference.

Inaugurating the Conference Dr. S. C. Dutta told that he had always been keenly interested in the problems of the province. He particularly emphasized the necessity of changing the method of medical education in the country.

A Medical Scientific and Public Health Exhibition was held in connection with the Conference which was opened by Rev. J. Nicholsroy, the Hon'ble Minister of Medical and Public Health, Assam, on 24th October, 1950 at 4 P.M.

Scientific Sections—Medical, Surgical and Gynecological sections were held under the presidencies of Dr. Lightbody, Dr. S. C. Dutta of Calcutta, Dr. Krishnan, Professor of Assam Medical College respectively. In all the sections large number of members attended.

A Maternity and Child Welfare meeting with baby show was also held under the Presidency of Dr. H. K. Das and prizes were distributed to healthier babies.

Special health lectures were organised every evening during the Conference for the benefit of the public who largely attended on the following subjects:—(1) Common diseases of Assam by Dr. L. K. Baruah, (2) Maternity and child welfare by Dr. P. D. Hazarika, A.D.P.H., (3) Tuberculosis by Dr. G. S. Das.

Scientific films were also demonstrated each night. There was arrangement each evening for musical entertainment too.

Presidential Address

Dr. H. C. Baruah in his presidential speech referred to the first session of the Conference held in Dibrugarh in 1949. He then referred to the Assam Medical College and said:

This institution, the creation of our late leader Lokopriya Bordoloi is running its fourth academic year and in another year we shall have its first batch of graduates. The condensed M. B. course has also been added from this year for the benefit of the young L. M. P's. I congratulate the authorities for their success. It has also received a merited word of praise from our Prime Minister Sri Jawaharlal Nehru for the services the students rendered to the earthquake sufferers. But to the narrow bottleneck of the Biology course in the Cotton College, the material for admission this year, both in quantity and quality, has been very poor. The Government have conceded the privilege of private practice to the teaching staff of the College; this has become necessary to attract suitable men to work in a new institution in an out of the way place like Dibrugarh where amenities of life are not of the same standard as in other cities of India. As soon as the contract service men are replaced, this concession of private practice should be withdrawn. Otherwise, there is every risk of turning this fine residential institution where young men are taught to be useful

CILAG *Swiss Pharmaceuticals*

The new spasmolysant with analgesic action for the treatment of every type of spasms.

LYSPAMINE

LYSPAMINE (1-nicotinylamino-1.2-diphenylethane + phenobarbital) is unique for its extensive field of application and its favourable pharmacological properties :

Quick and reliable action on both myogenic and neurogenic as well as mixed spasms

Simultaneous relief of symptomatic pains associated with spasms

Prophylactic as well as therapeutic effect on the centres of spasmodic susceptibility

Quick absorption and safe elimination

Least toxicity, therefore, no side effects

Indications : Angina pectoris. arterial hypertension, circulatory disturbances, acrocyanosis, Raynaud's disease, spasms of the digestive tract, dysphagia, spasmodic colitis, pyloric spasms, cholangitic pains cholecystitis, singultus, dysmenorrhoea as well as opening period in obstetrics and retention of urine.

Tablets of 0.3 gm., rectal suppositories of 0.5 and 1.0 gm.

CILAG - HIND LIMITED

MUBARAK MANZIL, APOLLO STREET, BOMBAY, 1.

Sole Distributors for India :-

HIND CHEMICALS LIMITED, 104, Apollo Street, Bombay, 1.

NAS. 628

Introducing **Injectable VIBELAN**

for intensive treatment of vitamin B deficiency. It contains, in adequate therapeutic amounts, all the principal members of the vitamin B group:—

THIAMINE HYDROCHLORIDE	PYRIDOXINE
RIBOFLAVINE	CALCIUM PANTOTHENATE
NICOTINAMIDE	together with Choline as an additional lipotropic factor.

Indicated in all cases of vitamin B compound deficiency where rapid action is required or where oral medication is insufficient.

Available in 10 c.c. vials and in 2 c.c. ampoules.

Vibelan tablets for oral use continue to be available in packings of 25, 100 and 500 tablets.

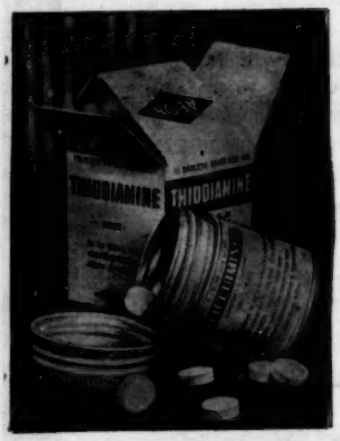
THE BRITISH DRUG HOUSES LTD., LONDON

Distributed in India by:

BRITISH DRUG HOUSES (INDIA) LTD., P. O. Box 1341, Bombay, 1

Branches at: **Calcutta - Delhi - Madras**

THIODIAMINE



DEATH due to CHOLERA can be reduced to the minimum by THIODIAMINE, a strong antibacterial agent derived from the cortex of the Crataeva Roxburghii (Barun) having its empirical formula-$C_{15}H_{10}N_2S$.

- It checks vomiting almost immediately.
- It prevents dehydration quickly by retention of fluid administered per oral route.
- It has got a strong bactericidal and bacteriostatic action *in Vitro* and *in Vivo*.
- It neutralises endotoxins to a considerable extent, thus relieving the patient from neuro-cardiac embarrassment.
- It is effective in extremely low dosages.
- It is a nontoxic drug within the limits of its posology.
- It is 100% Indian in its origin.

THIODIAMINE can be claimed not only as a specific for CHOLERA but can also be used with the greatest advantage in curing Bacillary Dysentery, green Diarrhœa, Diarrhœas of unknown etiology, Whooping Cough etc, etc.

For dosage, direction and full particulars kindly write to :

AEON CHEMICAL INDUSTRIES LTD.,

55, Canning Street, :: CALCUTTA-1.

servants of the society, into a professional market place where skill is sold to the sick people in a Government equipped stall. I do not care if other medical colleges in India allow this concession. They should also stop this practice if the right type of medical men are to be produced in them.

I am sure, many of my colleagues will support me that this privilege of private practice should be withdrawn in case of the members of the State Medical Service, and, of course, they should be given adequate pay on a par with other Services. Otherwise, for the economy in the pay of the Medical Officer the poor who cannot pay their fees, will have to pay in suffering.

AYURVEDIC COLLEGE

Dr. Baruah continued—On the plea that our country is poor and cannot afford the expense of modern medicine for all the people, particularly in the rural areas, our Government was persuaded by influential parties to start an Ayurvedic College at Gauhati to manufacture the village vaid. About the same time an up-to-date Medical College was started to train medical graduates apparently for the service of those who can afford them and about the same time the B. W. Medical School was closed down to stop manufacturing inferior grade medical men so that the rich may not run the risk of being attended by them and this was done at a time when the whole profession vehemently protested against lowering the standard of training and treatment.

Dr. H. C. Baruah,
President, II Assam Provincial Medical Conference, Jorhat.

The authorities agree that in the usual process of evolution in some one thousand and odd years through various changes the old Ayurvedic system of medicine has attained the present scientific standard in modern medicine. There is only one system of medicine and that is the modern system which science has perfected and which is as likely to be left behind and rendered obsolete if it does not conform to the rapid advance of science, as the Ayurvedic medicine has already been in its present form. It is preposterous for a State to provide for an obsolete system of medicine for the poorer patient on ground of economy. We might as well ask them to stick to "Bihlangoni" and "Jori" which are cheaper and as efficacious, while we have electrocardiograms, deep X-ray therapy and antibiotics.

The money could have been very well utilised for provision of research and standardisation of indigenous drugs in the Pharmacological Department of the Assam Medical College which would have made medication in treatment cheaper than imported foreign drugs, and also for an Ayurvedic Ward where these drugs could have been tried and for a diploma course in Ayurved. In ten years' time our successors will consider this money as a total wastage.

HEALTH SERVICES

The State aid towards curative medicine still continues to be urban. All the beds for the sick are in the district and sub-divisional headquarters. The rural side is left entirely in the hands of inefficient local bodies of antiquated type with petty politics, and their finance is so very miserable that some of the dispensaries have to go without essential medicine half the time. The scheme of subsidised dispensary is almost a failure.

MATERNITY AND NURSING SERVICE

Some relief is available in towns and headquarter stations for women in trouble in labour. But in rural areas women are expected to go in labour in the worst hygienic condition with the help of other women of the house or of a neighbouring house; in case of difficulty, services of a dirty, untrained Dhai is requisitioned. Because there is no record of the enormous child and maternal mortality and morbidity, the society is atrociously indifferent. The profession does not control funds and any suggestion from it for a maternity service to safeguard the health of the future generation and of the mother to enable her to give birth to healthy children, to the authorities is considered exotic and shelved. When Assam's share of Kasturi Bai Memorial fund became available, it was suggested that money should be used for developing a rural maternity service. At the suggestion of our late leader Lokopriya Bordoloi, a very modest scheme was prepared. It was scrutinised and praised but vetoed and shelved. 'No question of there being no money this time. Any scheme prepared by the politicians is right even though they make a mess of it, and the whole society has to bear the cost of their failure. But experts are cranks, they are to be ignored and kept at a distance along with their schemes.' That seems to be the prevailing idea.

We have started training of nurses in two hospitals. Their products will be able to staff all the urban hospitals in about 20 years' time at the present rate of training. The question of rural nursing has not yet been considered. During my tour in the villages I once harrangued the members of the Tezpur Local Board on the subject and got them to give me village girls for a short course of three months' training. I got the Local Board to sanction ten stipends of Rs. 10/- each. I trained the girls in home-nursing, simple midwifery and first aid, the medium of training being vernacular. In return I got their free services in the hospital and I got the local Mahila Samity also interested and obtained their full support in it. At the conclusion of the training I got them examined by a

Board of Examiners consisting of three local and experienced medical practitioners. They issued certificates of pass to the successful candidates. I got the Local Board to open a register of Gaonlia Dhatri (village nurse). They issued Registration Certificates at a fee entitling them to practise within the Local Board area. From the reports received I understand that some of them are still practising and doing very useful work. Some are married of course, but are still useful. Some alas! took service in the tea gardens. I entirely agree with you in your unspoken protest that three months' course, however intensive, is hardly long enough to train a nurse. But it is aimed to be the beginning of getting the public of rural areas impressed with the benefit of home nursing and clean midwifery by a member of their own village, and once the demand is made the scheme could be improved upon. Without fuss, without being a burden on the State finance and with a little co-operation from the Local Board, this scheme could have been worked to provide a measure of relief in the rural areas. But it fell on unproductive soil and did not sprout. It lacked political value to sustain it. Brothers, I want you to give this scheme your deep and sympathetic consideration, either the scheme in its present form or any other similar scheme can be devised to give nursing service to the villages of Assam. You will have to endow it with vote catching value in some form to make it attractive.

TEA GARDEN MEDICAL PRACTICE

The medical profession of the tea gardens cater for the labour force and staff of the tea industry. They are complete health units and include investigation, prevention and cure of the sick. Services of the Ross Institute at Jorhat are available to them. They are all members of the British Medical Association and they have local Associations to discuss their problems. If there is no bar, legal or otherwise, I invite them to join our Association as members so that we can collaborate in our common object of service to the sick.

MENTAL AND MORAL DISEASES

The mentally sick people of the State are housed in the Tezpur Mental Hospital with 716 beds. It is always overcrowded and the overflow in the shape of waiting list after certification is housed in various jails of Assam. The institution is just now suffering from financial stringency and is reduced to a state of asylum from which it was uplifted with great effort 20 years ago. Treatment is primitive and consists mainly of the "sheet anchor" *e.g.* occupation therapy. There is no preventive side, there is no school for the mental defectives, there is no clinic for early cases and the hospital it not properly equipped for up-to-date therapy. In addition to provision for the above defects, the most urgent need is development of a social service for mental hygiene. Preventive measures in mental disease are more important than in any other disease. Physical diseases disable individuals but mental diseases disable a community.

People suffering from this variety of unrecognised and uncared for diseases are housed and treated in our jails and the patients are called criminals according to laws of the country. Efforts are being made in advanced countries to give the dignity of moral hospitals to these institutions. Efforts were made also in Assam during the past year to take the first step towards it but it ended in nothing except incurring expenditure in the efforts. Under the existing arrangement we burn the candle not only at both ends but also in the middle. We incur heavy expenditure to lock up the criminals, the society loses the help of these members in its work of progress and, what is worse, we manufacture fresh criminals in these jails where these moral patients are expected to be treated and cured. At no stage of our jail administration real and enduring efforts are made for reclamation of these moral patients. The only way of preventing crime is to cure the underlying disease and for that purpose treatment must start at the "Problem Child" stage. It is a job for the scientist and not for the politicians.

JUVENILE DELINQUENTS

We lump the juvenile offenders and the adult criminals together in our jails with indescribable miseries to the former. There is no difference in apprehension, remand and trial between them and the hardened criminals. Children Act is not operative in Assam. In January 1938, a scheme was prepared for a Juvenile Jail to be housed in the remodelled Nowgong District Jail. Finance did not become available to implement it. It was revived again as a post-war development scheme with the same result. In August, 1949, there was an Education Ministers' Conference in New Delhi. It discussed the subject of Juvenile delinquecy also. It was found that operation of the Children Act varied in standard in different States. A committee of experts was set up, in which I had the honour of serving to examine the operation of the Act in various States and to prepare a model Children Act in the light of recent developments to be put in the concurrent list. We finished our labour on 22nd December, 1949, and it is now awaiting the sanction of our legislature. I hope Assam will be able to find the money to implement it and then the disgraceful treatment of our juvenile offenders will be mitigated.

MANUFACTURE OF DRUGS

Indian manufacturers got an impetus for development by the last war-time restrictions of import. That impetus continues to be operative by the present currency restriction. Manufacturers have since made steady progress but not at the rate expected both in quality and quantity. The profession should increasingly use drugs and appliances of our manufacture consistent with purity and accuracy. Unless our manufacturers produce sufficiently to contest in the market with foreign import, we shall never be able to reduce the cost of treatment. A clause, however, should be incorporated in the Drugs Act requiring a certificate of purity and standardisation from a reliable and authorised laboratory before marketing for creating confidence of the profession and consumers.

PROHIBITION

Prohibition has come to stay whether you like it or not and is gradually creeping up from the south. We welcome it for the sake of national health and economy. But it has left a void. Before the bootleggers occupy it, we must evolve a national drink of soft nature. At the risk of a snigger or two, I shall make a present of an idea to the Indian Tea Association. Cold-bottled aerated tea is a healthy and stimulating drink. It can be further improved in taste by addition of salt and lemon, sugar or cold milk before drinking, and those who possess permit, can have it laced to their taste. If advertisement can make Coco-Cola a national drink of all America, tea has a superior claim under the same circumstances in India. It will increase the sale of tea and also develop a subsidiary industry.

Opium habit is surely and steadily dying out inspite of the smugglers and their days are numbered.

SRIMANTA SANKAR MISSION

The Srimanta Sankar Mission, a new and vigorous infant, is the result of the efforts of two of our leaders, the late Lokopriya Bordoloi and Sjt. Haladhar Bhuiyan, the veteran Congressman of Nowgang. It has already successfully carried out a campaign for relief of eye trouble. Its aim is to render aid in the tribal areas. It has interested itself in the relief work in the areas devastated by earthquake. We welcome its advent in the field of social service. We will cherish and nurture it with the best of our ability.

The extent of help our profession can render to fight malnutrition and social evils was hinted by our President Dr. Chamanlal Mehta in his presidential speech at Allahabad on 25th December, 1949. We must have representatives in force in the legislature to put our views to the members in unmistakable terms. But beware of party politics. Once in its grip, you lose your identity in the mass and you lose touch with reality and lose your usefulness.

My own opinion is that our best card is this our organisation, the Indian Medical Association. Only it requires immense strengthening. With a strong Association we can fight with our own weapons, we fight in the State conference, we fight in the All-India Association, we fight in the world organisation and keep our views before the world. That, I hope, will bear fruits, if others fail.

THE EARTHQUAKE DISASTER

This is the unkindest cut of all. It has literally shaken the nerves of the people of Assam and set back improvement of living standard by 15 years. The picture of devastation is too fresh in our mind. The economic loss, I shall leave to the authorities to compute. Leaving aside the obvious sufferings of the people of the affected area, the whole population of the State suffered from an anxiety neurosis whose effect may be lasting in susceptible cases. Many young girls went into hysterical fits. The student community became emotional and unreasonable and went on a strike. It took about a fortnight for mass psychology to become normal.

Calamities are not without their silver lining. Assam is no longer a neglected, forgotten frontier. The love and sympathy that have been pouring in on us encourage us to make double efforts and start afresh. The loving gift of 10,000 mds. of rice which became immediately available from the people of Pakistan was like a soothing balm to an inflamed sore. We quarrelled, we parted but we are still brothers. We reciprocate the sentiments.

The profession's duty is clear and we must not fail. We want continuous batches of volunteers from our younger brothers to go and live amongst the tribal brothers, the Abors, the Miris and the Mishmis and by sympathetic help show them how to rehabilitate. This will take at least one year.

The President then touched upon a few more things and concluded his speech with thanks to all assembled.

Resolutions passed at the Second Assam Provincial Medical Conference

1. (*a*) This Conference expresses its deep sense of sorrow at the sudden demise of our beloved leader Lokapriya Gopinath Bordoloi and conveys its heart-felt sympathy to bereaved members of the family.

(*b*) This Conference expresses its deep sense of sorrow at the sudden death of Dr. Kumud Sankar Ray, the eminent tuberculosis specialist of India and the founder of Jadavpur T. B. Hospital and President of the Indian Medical Council.

This Conference considers that his death caused a void in the constructive sphere of medical profession, which it will be difficult to fill up. His guidance in the profession at this time in India would have been of immense value.

This Conference offers heartfelt condolence to the members of the bereaved family.

(*c*) This Conference also expresses its deep sense of sorrow at the sad demise of the following doctors:—1. Dr. D. Hazarica. 2. Dr. Monohar Khan. 3. Dr. N. Baruah. 4. Dr. Sashidhar Baruah. 5. Dr. Hem Kanta Baruah. 6. Dr. Rukmini Kanta Bhattacharyya, and conveys its sympathy to the bereaved families.

2. Resolved that the Government be requested to make provision for post-graduate and refresher course training in the Assam Medical College as soon as the same received final recognition.

3. In view of the various difficulties and anomalies experienced on account of the non-medical officer being placed as the Secretary to the Government of Assam on Medical Public Health Department this conference urges the Government to appoint a medical officer as the Secretary in charge of Medical and Public Health Department which will in the opinion of the Conference facilitate work promptly and efficiently.

4. Resolved that the Assam Medical Council be requested to appoint a medical man preferably the P.A. to I.G. C.H. as Registrar of the Council as the same is supposed to deal with medical and ethical matters.

5. Resolved that the Lokopriya Bordoloi memorial committee be requested to consider about the establishment of a T. B. Hospital in a plane District to commemorate his name.

6. Resolved that the Government be requested to introduce the system of Mobile unit at least one in each District to carry on the Rural Medical Relief in the area where there is no dispensary.

7. Resolved that the Government be requested to Provincialise all the dispensaries under the Local Board in order to improve the dispensaries uniformly and to remove the anomalies and disadvantages of the dual control.

8. Resolved that the Government should make an early attempt for the unification of the medical service. Further resolved that the designation of A.S. Grade I and Grade II be abolished and all medical men in service be designated as Medical Officer with a relative change in the designation of the administrative officer.

9. This Conference is of opinion that time is not opportune to create an All-India Health Service, and hence this Conference requests the Government of India to drop the idea for the time being.

10. This Conference strongly urges the Government of Assam to associate non-official medical men to the visiting staff of the District and sub-divisional hospitals of Assam as this Conference is of opinion that in these days of specialisation of various branches of medicine the limited number of Doctors now managing the hospitals are quite inadequate.

11. This Conference urges upon the I.T.A. to implement at an early date the recommendation of the Tea Garden Sub-

committee formed by the Assam Medical Conference at Dibrugarh in 1949.

12. Resolved that the Government be urged to reconstitute the Governing Body of the Assam Medical College with at least three fourths of its members from the medical profession and that the President of the body be also a medical man. It was so recommended by the Advisory Committee appointed by the Government in 1946 and it is in practice in other Medical Colleges of India. This Conference disapproves the election of members on communal basis and of higher percentage of non-medical personnel in a technical body.

13. As the list of scale of fees for surgical operations and its distribution were published by Government *vide* its Circular No. AG 338 LSG dated 1-2-37 with a slight modification thereafter, is now too old in consideration of advancement of Surgery, it is therefore resolved that the Government be requested to re-nomenclature the list of the scale of fees for operations and its distribution among members of the staff be totally abolished and the entire fee should go to the Hospital fund.

14. (*a*) This Conference urges upon the Government to increase the number of seats in the condensed M.B. Course in the Assam Medical College to at least 25 as the present number of 12 is quite inadequate to meet the present demand.

(*b*) Resolved that the Government of India be requested not to close down the Lake Medical College, Calcutta in 1952 as contemplated but to allow it to be run for at least ten years more in order to afford facilities to civilian medical licentiates with reservation of seats for each State of India.

15. This Conference learns with regret that strict principles are not followed in admitting students into the Assam Medical College both in the Condensed and the General Courses and, threfore, it requests the Government to adhere to the official principles. In this connection the Conference brings to the notice of the Government that (1) 12 students were to be taken in the condensed M.B. Course this year but the thirteenth student was admitted and this was followed by the fourteenth nearly after a month or so; (2) selections were too defective and no laid down principles were followed; (3) admission of 65 students to the first year is the limit in the general course but 68 were taken in; (4) several non-Biology brilliant students were at first refused admission, but later on seven or eight such students were admitted with no information to the refused students.

II HYDERABAD MEDICAL CONFERENCE—The Second Hyderabad State Medical Conference was held at Warangal on 21st, 22nd and 23rd October, 1950.

The President-elect, Col. K. N. Waghray, the out-going President Dr. G. S. Melkote and nearly 40 others (delegates and members) were received by the Chairman and members of the Reception Committee at Kazipet 4-30 p.m. on 21st October.

The Inaugural Session—In the premises of the Warangal Hospital was erected a well-decorated shamiana with a seating arrangement for nearly 400 persons. The inaugural session started punctually at 9 a.m. on 22nd October with *Jan-Gan-Man*. Besides the medical men from different parts of the State, about 250 citizens of Warangal prominent among them being Capt. Nanjappa, Mr. Obul Reddy and Mr. Shiva Raj were present. Sri Phoolchand Gandhi, Minister for Health, inaugurated the Conference.

The Chairman of the Reception Committee, Dr. L. R. Deshpande then welcomed the guests.

Thereupon Col. Waghray delivered his presidential address.

At the end of the inaugural session, Capt. Nanjappa, Special Commissioner, desired Sri Poolchand Gandhi to present Dr. Pophle a fountain pen in appreciation of his meritorious services at the last Eye Camp at Warangal.

This was followed by the second annual session of the Hyderabad Provincial Branch.

Dr. U. R. Pargaonkar was re-elected as Secretary.

Dr. Venkat and Dr. Feroz Husain were elected as Joint Secretaries for districts.

Dr. Seshadri was nominated as a Joint Secretary from Secunderabad and Dr. Pophle as the Hony. Treasurer.

The Scientific Session started punctually at 2 p.m., and Major General S. L. Bhatia inaugurated the scientific session. The following papers were then read:—Dr. Shanker Rao Jadhav: Chloromycetin in Typhoid, Dr. Soma Sunderam: Thoracoplasty. Dr. Miss P. M. Naidu: Morbidity following child birth. Dr. Chalpati Naidu: Common Injuries of Elbow Joint.

The Scientific Session adjourned at 4 p.m. to meet again at 6-30 p.m.

At 4-30 p.m. the Open Session of the Conference started. All the resolutions previously discussed and approved by the Subjects Committee were taken up and were passed with a few minor amendments. The Open Session concluded at 6 p.m.

The adjourned Scientific Session commenced again at 6-30 p.m. with Major General S. L. Bhatia in the chair. A paper by Dr. Ram Mohan Rao on Ascariasis was followed by those of Dr. L. R. Deshpande on Amœbiasis and Dysentery, Dr. Dyanand Rao on Lithiasis, Dr. Harishchandra on Nutritional Diseases in Children., Dr. B. K. Phatak on Modern Trends in Treatment of Eye Diseases, and Major General S. L. Bhatia on Impressions about the Health Conference at Candy, Ceylon. The Session terminated at 10 p.m.

On 23rd October at 9 a.m. a group photo of all the members of the Conference including Sri Phoolchand Gandhi, was taken.

Later, all members having been invited specially to witness the foundation stone laying ceremony of the new Warangal Suba Hospital proceeded to the site.

Excursions included trips to Ramappa Temple and Ramappa Tank, and visits to Warangal Fort and 1000-pillar Temple.

Presidential Address by Raja Bahadur Lt. Col. K. N. Waghray: Following are the excerpts from the presidential address delivered at the Warangal Medical Conference on 22nd October, 1950:—

Our health services are inadequate. Our needs are both large and urgent—the urgency having grown with our independence and the responsibility accruing therefrom. As our Prime Minister said at the inauguration of Pacific Relations Conference at Lucknow, "Time has passed by us and we have not kept pace with it; so we have suddenly arrived at a stage when we have to run—walking is not enough...."

UNITED MEDICAL SERVICE

Differences between various systems and classes of the profession will not do now. It is time we closed our ranks and agreed to work on scientific lines. There is no such thing as new chemistry, new physics and new science. We talk only in terms of periodical advances in science. Nor is science the coveted possession of an age or of a people of a country. Medicine like all scientific knowledge should be the common possession of mankind; and as such whatever the past and the present have to contribute, should be pooled for common good.

A perusal of the history of medicine, would make it obvious that modern—the so-called "western"—medicine undeniably represents the latest development of ancient Hindu medicine, first adopted and modified by Greece, later by Arabia, and finally by Europe. In fact, what the so-called systems represent are but the different progressive stages of the same experiment. If we agree that medicine is a highly developed science the intending student of medicine must first have an adequate general training to be able to grasp scientific teaching and then must receive a good grounding in basic sciences.

RAJA BAHADUR LT.-COL. DR. K. N. WAGHRAY,
President, II Hyderabad Medical Conference, Warangal.

With our limited resources of finance, does it then stand to sound reason to perpetuate parallel schools of different systems of medicine? I contend that there should be one common educational institution and one common basic qualification for entrants thereto. The curriculum, however, should include teaching of the principles of the indigenous and other systems of medicine at suitable stages. With such a unified and integerated teaching, I envisage a wholesome blend of the old and the new for the ultimate good of all; and an almost immediate emergence of a unified State Health Service.

To day we find separate parallel 'Unani,' 'Ayurvedic' and Allopathic departments run by the State. Organization of parallel Health Services based on indigenous systems, homœopathy and modern medicine is not merely a retrograde step but definitely anti-national too; for, it amounts to nothing short of dissipation of national effort and resources.

It is said, these indigenous and homœopathic practitioners could as they are serve the rural population. We have no right to make a discrimination in the quality of health service to be provided for rural areas and that for urban areas. It would be simply undemocratic and irrational. It would thus be clear that a single unified State Medical Service, which should be capable of meeting the *total health needs* of the people and which is based on universally recognized and accepted principles is the only answer.

Granting this is accepted it becomes incumbent on us to seriously consider how we would set ourselves to utilise the vast number of indigenous practitioners thus bound to be thrown out so as not to make them a burden and an addition to the swelling ranks of discontented elements of society. In other words, we must think seriously how best we could rehabilitate this vast number to the best advantage of the administration, the profession and the public.

I should first insist on compulsory registration of all who practise medicine as an avocation, irrespective of which school they belong to. This should at once meet the double purpose of rectifying the growing complaint of unqualified competition, and, by tightening up of rules of ethical conduct, improving their standards of performance in practice. Once having been placed on the register they could then be given an option to join the State Services after necessary further short training as Health Assistants or to continue in practice as heretofore.

SHORTAGE OF QUALIFIED MEN

We talk of shortage of fully qualified medical men. Yet our administration has failed to encourage our young men who take up modern medical studies by not getting their qualifications recognized as at par with those of the rest of India and by restricting on top their entry into the only service open to them *viz.*, the State Medical Service and thus has made their prospects dubious! How then can we expect to draw our best into the profession in larger numbers? I should like to reiterate our great concern in regard to the future of our young qualified doctors. Till the time that their qualifications are recognised on an all-India basis they must be provided for in the State Medical Service with priority.

To meet the shortage of bonafide, qualified medical men I, further, hold medical education should be free. and those that pass out must compulsorily give say 10 years' service in case of men, and 5 years in case of women, to the State. It is a great pity we see large majority of women doctors qualifying and then leaving the profession, and geeting married to settle down as mere housewives. Is it not a sheer waste of national asset? Yet we cannot altogether disregard traditions of our society. Hence the suggestion that after 5 years' compulsory service they could, if they so choose, retire from active professional work.

SPECIALIZATION

Further no field for specialists has yet been provided in the services. Neither have we special institutions nor separate cadre for specialists. Need for developing institutions for selected specialities cannot be over-emphasised. Yet, while talking of specialization I feel compelled to utter a word of caution. We see the pendulum swung to the very extreme in modern too narrow specialization in other countries. I am afraid medicine cannot treat a human being as just the eye or the nose or the tooth or the abdomen or the heart. We have to look at things pertaining to man as a whole. At least just at this stage I should encourage for our country more the growth of a class of senior experienced doctors as general consultants, rather than of those confining themselves to narrow specializations. Let me not be misunderstood that I am preaching against specialization, altogether. There are certain branches where specialization is necessary and useful. I only plead for caution in stretching specialization too far.

Further in respect of post-graduate specialistic studies we will have to define what we really need. We need not be enamoured of mere additional letters of fame and apparent market value. What we need is real achievement. Unless a young doctor has been engaged for at least 2-3 years in general work—he could not even indicate correctly his liking for a particular speciality. He should only then take his place as an apprentice in that speciality for a couple of years or so and only if approved as likely to derive benefit, proceed for post-graduate studies in that speciality to places where that speciality has been particularly developed.

SUPPLIES OF MEDICINE

Even with medical men and auxiliaries being made available in adequate numbers no Health Service could successfully achieve its objective, unless adequate supplies of medicines and appliances are available. We have so far been dependent on foreign countries for such supplies, and even this day we find in the same breath talks of restrictions on import and throwing open of general licences! It is time that due encouragement will have to come however both from the Government and from the profession. In several instances there shall yet arise need for foreign expert technicians. There would also be need for importing machinery and basic chemists yet. If, therefore, a collaboration between foreign firms and local enterprises be brought about, it becomes possible at once to build up industry, train sufficient local talent to gradually replace foreigners and provide employment to large numbers of our people, besides meeting our requirements at cheaper cost. Here again the Governmental control over standards and quality becomes imperative; for which it is time that the Drugs Act be introduced into the State and vigilance imposed on manufacture and sale of medical supplies.

Here it may be pertinent to remark what colossal waste of national money is allowed to occur by indiscriminate introduction by respective manufacturers and their agents of various patents!

Some legislation to discourage varying proprietary names being given to the same basic drug must be enacted to save the public and the profession alike from necessary waste and confusion. I can quite see that a combination may be put up under a separate name, but certainly there seems no justification for say pure and simple vitamin B1 to be sold under differnt proprietary names. This cannot be called anything but fraudulent exploitation.

With squalor and poverty all over, howsoever big schemes we may frame, we cannot expect tangible results. Could we not concentrate on a few componer conditions responsible by large for our ill health and deal with them thoroughly, first?

The main enemies responsible for spread of most infections are the mosquitoes, the fleas and the flies. With more generous use of insecticides like DDT, I am sure we could achieve much more at much less inconvenience to the public and in quick time in eradicating a large number of common epidemics and nuisances. It is time our policy of preventive work is rationalized in the light of new knowledge of modern insecticides and antibiotics. Further, I feel sure with prophylactic mass vaccinations at child welfare centres against tuberculosis, small-pox, diphtheria, whooping cough and tetanus we should be able to render great service to our youth.

Epidemics and infections would indeed need, for their adequate control, a general improvement of sanitary environmental conditions. While this is bound to take time to be adequately provided, mass inoculations and vaccinations should go a very long way. And if these preventive vaccines and inoculations are manufactured locally the cost should not be very high either. I plead that so long as our environmental conditions have not had an opportunity to be duly rectified we should make use of these and similar preventives intensively.

Further, with the reported miraculous successes in the treatment of venereal disease, tuberculosis and other infections with newer antibiotics, it seems least justified to economise on their generous and large-scale use.

The pendulum has rightly swung from curative or individual medicine to preventive or group medicine. With limited resources, may it not be worth while our seriously undertaking preventive work on full scale at Government expense and leave curative work to be shared between the exchequer and public philanthropy.

It may be quite relevant here to reiterate that the Hyderabad Branch of the Indian Medical Association would be always happy, ready and willing to co-operate with the administration both in the matter of framing a positive health policy and assisting in the execution thereof whenever so required and asked.

Yet even with all this no substantial good can come if the standard of ethics of the profession is not maintained at a high level. The profession comprises of the pick of the society. Their responsibility, therefore, both as citizens and as members of the profession is great. To discharge the same truly the profession and its individual members must maintain high standards of moral and ethical conduct in their dealings not only between their patients and the society in general but also among themselves.

It is no more an age of individualism! We have to live as a group—which implies 'give and take' of the individuals forming the group. Each individual amongst us has, therefore, to contribute his share in example, in professional skill and work, in ethical conduct and even in money to produce the desired collective good of the group. Medical profession has been called a noble calling. For maintaining the prestige attaching to that *'nobleness'* a real humanism has to be developed. It was with this idea that the Arasthu Memorial Lecture was founded and it is with this intention that a central library and a meeting hall are being undertaken to be constructed so that adequate opportunities for mutual contact and emulation are created. The Indian Medical Association, further provides the necessary common platform for such mutual contact. I do hope

you will be able to contribute largely and generously to these and similar activities and enrol yourselves freely in the Association and help maintain the traditional nobleness of the profession.

Resolutions passed by the Warangal Conference

1. This conference greatly regrets the loss of: Dr. D. B. Deodhar, Dr. Sridhar Naidu, Dr. P. S. Rao, and authorises the Secretary hereby to convey their families this message of sympathy and condolence.

2. The Hyderabad Provincial Branch of the I.M.A. deeply regrets the sad and sudden demise of Dr. K. S. Ray. By his death the Indian Medical Association as also the profession have suffered an irreparable loss.

3. As the environmental Hygiene Committee appointed by the Government of India, has submitted its report which is not available to the public making general recommendations, this Conference resolves that the Hyderabad Branch of the Indian Medical Association should appoint a Committee to study the report and recommend any modifications considered suited to the local conditions, so that these may be placed before the Govrnment for necessary action.

4. This Conference suggests that prohibition of smoking in cinemas and theatre halls which the Government have already introduced in certain districts be made uniformly applicable throughout the State.

5. In view of the modern concept of health and the trends at attaining and maintaining health, even preventive measures are considered a negative approach. Efforts should, therefore, be made to make people health-conscious and give them positive health rather than confining the efforts to help them in preventing diseases. With this ideology the medical men of tomorrow have got to be at least as much of a health educator as he is a medicine man today. Also in view of the tremendous demand of our country in matters of health coupled with the scarcity of the available medical aid, this Conference resolves that efforts be made to start a health education campaign all over the provinces in co-operation with educational institutions, health departments and the existing faculties.

6. Awaiting fuller and authentic reports before finally giving out its considered opinion this Conference feels perturbed by the summarised reports of the Gorwalla Committee recommendations as appearing in the Press. Whilst appreciating the financial stringency facing the Government this Conference feels that the lowering of scale of pay of the services is a retrograde and unjust step and hence bound to lower efficiency by lowering incentives for work, on the one hand, and the increase in corruption on the other. It is, therefore, considered as not to serve the best interest of the country. This Conference further feels that the Hyderabad Branch of the Indian Medical Association being the only representative body of medical men would have co-operated with the Committee in framing the recommendations, at any rate so far as the medical services are concerned, had they been invited. It is hoped that the Hyderabad Provincial Branch of the Association would be consulted at least now before the Government finalise the orders.

7. It has been brought to the notice of the Conference that the qualified medical men who keep their own private dispensaries often have difficulties in obtaining excisable drugs timely for the patient. This Conference, therefore, urges upon the Government that qualified registered medical men should be given permits to obtain and keep excisable drugs, in adequate quantity, for use in their dispensaries.

8. This Conference resolves that all municipalities in Hyderabad State having a population of 20,000 or more should appoint whole-time qualified Health Officers and adequate auxiliary health personnel. Till such time as qualified Health Officers are not available the municipalities should appoint local registered private medical officers on suitable remuneration to carry out the work, preference being given to those who have public health qualifications or previous experience of public health work.

SIRMUR BRANCH—At a meeting of the Executive Committee of the Sirmur Branch held at Dr. D. C. Gupta's residence on 7th May, 1950, seven members were present and Dr. Rabindra Nath of the Nahan Hospital was elected as the new Hony. Secretary of the branch.

PORBANDAR BRANCH—At a general meeting of the Porbandar Branch held at Evergreen Lodge, Porbandar, on 24th May, 1950. Dr. H. H. Chanda presided and 19 members were present. The branch congratulated Dr. T. D. Parekh for being elected as the Chairman of the Ranawao Municipality. Dr. B. D. Jhala, Chairman, Porbandar City Municipality, gave an 'at home' to the members.

Dr. K. W. Waghela, Dr. P. B. Pandya, Dr. T. D. Parekh, Dr. K. G. Solanki and Dr. H. H. Chanda spoke on leprosy, neurasthenia, rural medical practice, blood transfusion in anæmia and nephrectomy respectively.

BASTI BRANCH—At a meeting of the Basti Branch held at Dr. K. D. Tripathi's residence on 12th June, 1950, the members discussed the question of epidemics in the eastern districts of the U. P.

At another meeting of the branch held at Major J. N. Jaswal's residence on 20th August, 1950, the members discussed all the aspects of the question of 'Vanaspati' as an edible oil.

BANARAS BRANCH—The following resolution was passed at a meeting of the Banaras Branch:

In view of the fact that the causation of epidemic dropsy, popularly called 'Beriberi', has been traced to the Oil of Argemone Mexicana (Bherbhaur or Bhatkatia), and having regard to the widespread incidence of this disease at Banaras, it is resolved that the public health authorities, both urban and rural, in co-operation with the District authorities be asked to uproot and burn the Bherbhaur plants wherever found. Further resolved that the owners of lands in which such growths occur should be penalised just as the owners of lands in which Bhang plants grow without cultivation are penalised by the Government.

U.P. STATE BRANCH—At a meeting of the Working Committee of the U.P. State Branch held on 8th May, 1950 at Dr. Hukku's residence, 5 members were present.

The Committee condoled the sad deaths of Dr. R. N. Kapur of Kanpur and Dr. A. R. Sur of Faizabad. The name, "United Provinces Provincial Branch" was changed into "Uttar Pradesh State Branch".

To reduce the issue of loose and false certificates by Government Medical Officers and registered private medical practitioners, the committee suggested the following measures to the Government and other employers:—

(a) Maintenance of sufficient leave and sickness reserve,

(*b*) raising of moral tone and the standard of education of the employees, and

(*c*) improving the economic conditions of the masses.

The Committee also suggested that the rules governing medical certificates should be revised. Where a second opinion of an expert in that branch of medicine should be taken and the system of countersignature by government medical officers should be discontinued forthwith. The decision of the U.P. Government to postpone the question of provincialization of the municipal dispensaries was discussed. The Committee requested the authorities of the Lucknow University to arrange for an "Infirmary" with at least 200 beds, outside the city for the so-called incurables and the like.

The Secretary informed the house that Dr. V. S. Manglik having received the largest number of votes from the local branches of the I.M.A. in U.P., was declared as the representative of this branch to the State Medical Faculty of U.P.

At another meeting of the Working Committee of the U.P. State Branch held on 25th June, 1950 at the residence of Dr. Sood, 7 members were present and Dr. Sood presided.

The Secretary informed the members that the Government of U.P. had agreed to appoint the presidents and secretaries of all branches of the I.M.A. situated at the district headquarters of U.P., as assessors for the issue of permits for Streptomycin.

The Secretary also informed the house that the Government of U.P. have also agreed to exempt "establishments of doctors who treat and prescribe medicines for their own patients" from the provisions of the U.P. Shops Commercial Establishments Act, 1947.

A Sub-Committee was appointed to examine the Motor Taxation Enquiry Committee Questionnaire, and the meeting was adjourned.

The adjourned meeting of the Working Committee was held on 2nd July, 1950 at the residence of Dr. Sen where 10 members were present and Dr. Hukku presided.

The Secretary placed before the Committee the Vanaspati Prohibition Bill sent by the Government of U.P. After a detailed discussion, the Committee came to the following conclusions. The public are using Vanaspati just because pure Ghee is not available at reasonable prices. The use of Vanaspati has not yet proved definitely injurious to health. The manufacture and sale of pure Vanaspati with the addition of vitamin A should be allowed, under the present economic conditions.

BARRACKPUR BRANCH—A meeting of the Executive Committee of the Barrackpur Branch was held on 3rd July, 1950 at 5-30 p.m. at 95, Hospital Road, Barrackpur. Nine members were present.

The following resolutions were passed in the meeting:

Resolved that a medical certificate issued by a registered medical practitioner to one of the employees of the Ichapur Factory was not accepted by the authority of the T.D.E.(W). Ichapur in contravention of the C.S.R., Articles 834 (by which the leave rules of non-gazetted civilian personnel are governed) and, therefore, legal opinion be obtained to institute a case against the authorities refusing the certificate, to safeguard the rights and privileges of the registered medical practitioner.

Further resolved that the Secretary be requested to move the provincial and Central headquarters for all necessary help in the matter.

SOUTH CALCUTTA BRANCH—At a meeting of the South Calcutta Branch held on 23rd July, 1950 at 5 p.m. at 51, Theatre Road, Calcutta, in which twelve members were present the following resolution was passed:—

Resolved that early steps be taken to re-organise the branch and to revive and increase its membership. It was further proposed that the office be located for the present at No. 51, Theatre Road, Calcutta.

The subscription rate was fixed at Rs. 12|- per annum.

CACHAR BRANCH—At a meeting of the Cachar Branch held on 29th July, 1950, in which 22 members were present and Dr. P. C. Das was in the chair, an interesting case of pulmonary tuberculosis was demonstrated by Dr. A. C. Datta while talking on tuberculosis with special reference to preventive measures.

YEOTMAL BRANCH—At a meeting of the Yeotmal Branch held on 13th August, 1950 at Dr. B. B. Gupte's residence with Dr. G. V. Pandit on the chair, 6 members were present. After some discussion, it was decided to hold the second Madhya Pradesh Medical Conference on 13th, 14th, and 15th November, 1950 and Drs. G. V. Pandit and B. B. Gupte were elected as Chairman and Organising Secretary respectively.

MONGHYR BRANCH—At a meeting of the Monghyr Branch held on 28th August, 1950 with Dr. J. P. Sinha on the chair, 20 members were present and the following resolution was passed:—

"Resolved that the District Magistrate be moved to see that at least one member from this branch be nominated in the local bodies of the locality namely the District Board of Monghyr and the Municipal Boards of Monghyr and Jamalpur.

TANJORE BRANCH—At a meeting of the Tanjore Branch held on 30th August, 1950 with Dr. J. C. David on the chair, 64 members were present. Dr. N. Vaidyanathan spoke on "Coronary Insufficiency."

At another meeting of the branch held on 30th September, 1950 with Dr. N. Vaidyanathan on the chair, 32 members were present. The speech of Dr. T. S. S. Rajan on the "Village Vaidya Scheme" was discussed. Dr. G. S. K. Iyer, then spoke on "Surgical conditions of the accessory nasal sinuses."

NOWGONG BRANCH—At an inaugural meeting of the Nowgong Branch held on 1st October, 1950 at the Clinical Institute, 6 members were present and Dr. B. Borooah presided. Dr. H. K. Chaudhury and Dr. C. R. Dutta were elected as President and Secretary of the newly formed branch.

SOUTH INDIAN PROVINCIAL BRANCH—At a meeting of the South Indian Provincial Branch held on 13th October, 1950 at Mangalore, 15 members were present and Dr. U. Krishna Rao presided.

The question of arranging refresher courses for practitioners was discussed and the Government was requested to formulate a scheme for this purpose, in consultation with the Andhra and South Indian Provincial Branches of the I.M.A.

Regarding the Village Vaidya Scheme of the Government, the Council opined that in the interests of the public, it was not advisable to permit Vaidyas to give injections, even after a little training.

HEALTH

MILK OF MAGNESIA

Contains per ounce 34 to 40 grs.
of pure Magnesium Hydroxide

used as

ANTACID LAXATIVE
GARGLE DRESSING

Issued in 2 sizes containing 6 oz & 12 oz

Specify HEALTH *& get more of the best.*

INDIAN HEALTH INSTITUTE & LABORATORY, LIMITED.

Manufacturers of Specialities, Biological, Pharmaceutical & Chemotherapeutic Products

DUM DUM CANTT. CALCUTTA 28

Calcutta Depot
Associated Chemical Corpn., 5, Bonfield Lane, Calcutta

Madras Depot — *Assam Depot* — *E. Punjab Depot*
169, Broadway, Madras I — Paltanbazar, Gauhati — Goreya Jullundur [illegible]

There are **DIGESTANTS**
as well as **VITAMINS** *in*

CARICAPEPTOL

Each fluid ounce contains :

Papain	.. 24 grs.	Vitamin B_1	... 12 mg.
Diastase	... 12 grs.	Vitamin B_2	... 6 mg.
Ipecac	... 24 mins.	Nicotinic Acid	... 20 mg.
Vitamin B_1	... 12 mg.	Alcohol	... 23%

AROMATIC OILS, GLYCERINE AND ELIXIRBASE Q.S.

THE ORIENTAL RESEARCH & CHEMICAL
LABORATORY LTD. SALKIA • HOWRAH

when symptoms indicate iron therapy

Regeneration of hæmoglobin demands a supply of iron in utilisable form. 'Plastules' provide a maximum of iron with a minimum of wastage.

'Plastules' achieve a higher ratio of iron absorbed to iron ingested than any other therapeutic compound taken by mouth.
'Plastules' contain Vitamin B Complex which is essential to normal hæmatopoiesis.

'PLASTULES'

TRADE HÆMATINIC COMPOUND MARK

The small gelatine 'Plastules' are easy to swallow, there is no unpleasant taste, and the teeth are protected from iron discoloration by the capsule.

'Plastules' are available in three varieties: Plain, With Liver Extract, With Folic Acid.

Wyeth

JOHN WYETH & BROTHER LIMITED, LONDON

Distributors in India and Burma: GEOFFREY MANNERS & COMPANY, LIMITED
Bombay - Calcutta - Delhi - Madras - Rangoon
Pakistan: GEOFFREY MANNERS & CO. (PAKISTAN), LTD. Lahore-Karachi-Chittagong
Ceylon: MILLERS LIMITED, Colombo
Malaya: ANGLO-THAI CORPORATION LIMITED, Singapore & Branches

Special Announcement

'Paramisan Sodium'

BRAND TRADE MARK

Sodium salt of
para-Aminosalicylic acid is

now manufactured in India

By

NIVEA PHARMACEUTICALS LTD.

Registered users of trademark 'PARAMISAN'

CLIVE BUILDINGS, NETAJI SUBHAS ROAD,

CALCUTTA, INDIA

EXTRACTED from carefully selected Wheat Germ and tested biologically for its activity. A *natural* source of vitamin E, the essential vitamin for fertility.

Attention is also drawn to the high concentration of trace elements such as Manganese, Chromium, Cobalt and Iron, occurring in Wheat Germ Oil, and this may offer a possible explanation for the reputed superiority of the natural oil over the synthetic forms of vitamin E.

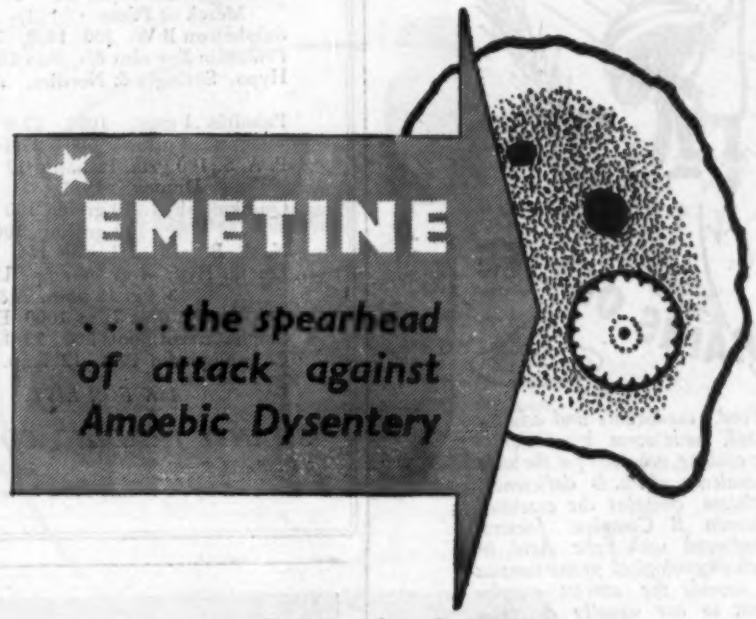
PACKINGS: Bottles of 25 capsules
Bottles of 100 capsules

CROOKES

WHEAT GERM OIL

THE CROOKES LABORATORIES LIMITED *(Incorporated in England)*
COURT HOUSE · CARNAC ROAD · BOMBAY 2

CLY—27



★ EMETINE

. . . . the spearhead of attack against Amoebic Dysentery

Emetine therapy is of greatest value in the early stages of amœbic dysentery. By bringing the acute manifestations under control, it effectively prepares the way for complete elimination of the infection.

Burroughs Wellcome & Co. — pioneer British manufacturers of emetine and its salts — offer a range of products which can be depended upon for purity of content and accuracy of dosage.

★ **'TABLOID'** *Hypodermic Emetine Hydrochloride*

★ **'TABLOID'**— *Emetine and Bismuth Iodide (Enteric-coated)*

★ **'WELLCOME'**— *Injection of Emetine Hydrochloride (ampoules)*

★ **'WELLCOME'**— *Emetine Hydrochlor., B.P., and Emetine and Bismuth Iodide, B.P.*

EMETINE 'B.W.& CO.'

MADE BY THE WELLCOME FOUNDATION LTD., LONDON SUPPLIED BY
BURROUGHS WELLCOME & CO. (INDIA) LTD.
BOMBAY

Food, inadequate and adulterated, made worse by unscientific cooking, accounts for the wide prevalence of Vit. B deficiency. Folicom contains the essential Vitamin B Complex factors, reinforced with Folic Acid, in such physiological proportions as to provide the correct supplement to our usually defective diet. It can therefore be prescribed with confidence in all disturbances of the nervous system, hypo-functions of the digestive tract, eye troubles due to avitaminosis, anaemia of sprue and during pregnancy and lactation.

FOLICOM

VITAMIN B COMPLEX

WITH FOLIC ACID

LISTER ANTISEPTICS

CALCUTTA : BOMBAY.

SPECIAL OFFER

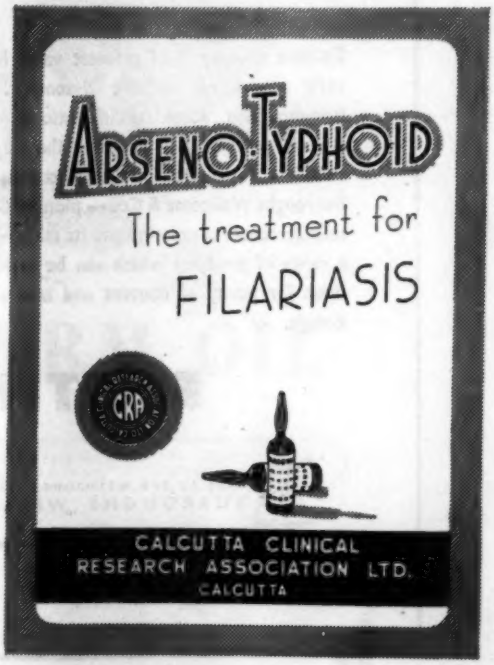
Streptomycin Dihydrosulph Merck or Pfizer 4/12
Penicillin Sod. Cryst. G. 2 5 10 lac.
Merck or Pfizer 1/- 2/- 3/4
Sulphetron B W. 100 14/8, 500 62/8
Penicillin Eye oint 8/-, Skin Oint 12/8 doz.
Hypo. Syringes & Needles. All types and makes
Paludrin .1 grm. 1000 27/8
" .3 grm. 500 25/14
P. A. S. 100 grm. Italian 6/12
" Dumex 19/8.
Quinine Bihyd. 10 gr Ind 100 amp. 21/-
" " 10 gr Eng. 100 amp. 36/4
N. A. B. 15 1/1, 30 1/4. 45 1/7
Emetin Hyd. ¼ gr 6 amp. U. S. A. 2/4
" " 3/4 gr 12 amp. A & H 6/12
Sulphaguinadine 7½ gr 1000 Eng. 25/-
Sulphathiazol Boots 500 23/8
Chloromycetin P.D. 12 Kap. 27/4

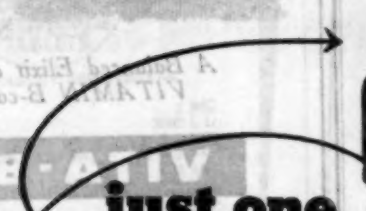
ASK FOR LIST.

SHANTI TRADING COMPANY.

64B Parel Road, BOMBAY-12.A.

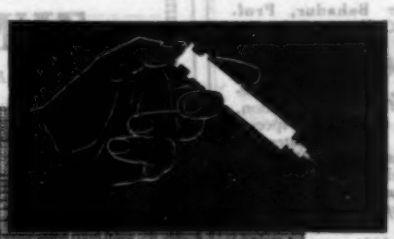
Telegrams : "BATTENS" Bombay.

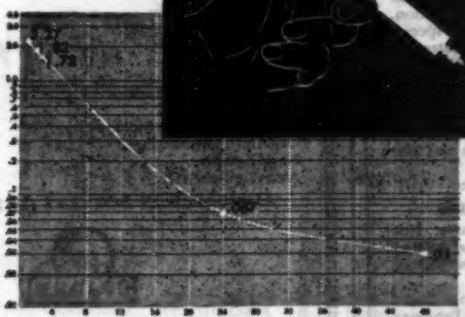




just one

1 cc. *aqueous*, well-tolerated injection of PRONAPEN* provides high penicillin blood concentrations during the first three hours and prolonged bacteriostatic levels for the next 48 hours in most patients.





SUPPLIED — For Aqueous Injection

In 1 cc. Vials containing 400,000 Units — Each cc. contains 100,000 units of quick-acting buffered sodium penicillin G crystalline and 300,000 units of prolonged-action procaine penicillin G crystalline.
In 5 cc. Vials containing 2,000,000 Units
In 10 cc. Vials containing 4,000,000 Units

*Pronapen is a trademark of Chas. Pfizer & Co., Inc.

PFIZER QUALITY

PFIZER

Manufacturing Chemists for Over 100 Years

CHAS. PFIZER & CO., INC., 81 MAIDEN LANE, NEW YORK 38, N.Y. • WORLD'S LARGEST PRODUCER OF ANTIBIOTICS

'SURQUAL' AUTOMATIC STERILIZERS (English Make)
INFRA RED AND ULTRA VIOLET COMBINED UNIT (American Make)
INFRA RED LAMP (English Make)
'SANITAS' ULTRA-VIOLET X-RAY BUCKY-CASSESTS, Etc. (German Make)
'BURDICK' CARDIOGRAPH DIRECT WRITING (American Make)
'LANCO' DENTAL BURS & OTHER DENTAL MATERIALS (Swiss Make)

TRANSFORMERS & RESISTANCES FOR ELECTROMEDICAL APPARATUS.

MURRAY & Co.,
SWADESHI MILLS ESTATES,
New Queen's Road,
BOMBAY 4.

WHERE VITAMINS ARE REQUIRED

A Balanced Elixir containing VITAMIN B-complex.

VITA-BIOL

Each ounce contains
Vitamin B_1 : 10 mgm., B_2 : 5 mgm., B_6 : 2 mgm., Calcium Pantothenate : 4 mgm., Acid Nicotinic : 25 mgm., Sodi Glycerophos : 500 mgm.,
with
Liver Ext., Folic Acid. in a base rich in natural Vitamins B.

MODERN DRUG HOUSE
MANUFACTURING & RESEARCH LABORATORY
12 R. ASHUTOSH MUKHERJEE ROAD, CALCUTTA-25

By Rai Dr. A. R. Majumdar Bahadur, Prof. of Clinical Medicine, Medical College, Calcutta. Retired.

1. BED-SIDE MEDICINE

A complete text-book of Medicine, Clinical and Systematic, containing (i) latest methods of case examination, clinical, instrumental and laboratory, simple and specialised and (ii) full consideration of Diseases, system by system with etiology, pathology clinical picture, diagnosis, prognosis and up-to-date treatment with prescriptions.

This is the most comprehensive, authoritative, profusely illustrated and extensively read text-book especially on the Indian Diseases of all descriptions.

Eighth Edition, July, 1949 : demy 1324 pages and 600 diagrams.

Price Rupees Twenty Two, postage One rupee

2. Modern Pharmacology and Therapeutic Guide

This is according to B. P. '48 and Ind. Pharm. List which have introduced about 200 New items and deleted or altered a nearly similar number : a clear knowledge of these is essential for Clinical Practice.

The book has in addition widest collection of Extr. Pharm., Patent and Indigenous Drugs and Food Products with nearly 500 chosen prescriptions and an elaborate Treatment Index.

This is a concise Encyclopaedia of modern Drug Informations

Eighth Edition, Sept. '48. Demy 768 Pages, illustrated.

Price, Rupees Twelve and annas Eight only, Postage twelve annas.

These two combined, give the general practitioners all latest guidance in rational Medical Practice in clear, compact and inexpensive form. A progressive practitioner needs every edition.

Therapeutic Advances 1949-50 are recently added.

Scientific Publication Concern
9, Wellington Square, Calcutta-13
14, Bangla Bazar, Dacca : Pakistan.

ZYMAFOLIC

Each Capsule contains :

Folic Acid	3.33 mg.
Ferrous Sulphate	150.00 mg.
Liver Concentrate	330.00 mg.
Vitamin A	8500 U.S.P. units
Vitamin D	850 U.S.P. units
Thiamine Hydrochloride (B_1)	3.33 mg.
Riboflavin (B_{2}, G)	3.33 mg.
Pyridoxine Hydrochloride (B_6)	1.50 mg.
Calcium Pantothenate	10.00 mg.
Nicotinamide	30.00 mg.
Ascorbic Acid (C)	30.00 mg.

AVAILABLE IN BOTTLES OF 30 CAPSULES

UPJOHN

THE UPJOHN COMPANY
MAKERS OF FINE PHARMACEUTICALS
KALAMAZOO, MICHIGAN (U. S. A.)

Sole Sales Distributors :
T. M. THAKORE & CO.,
43, CHURCHGATE STREET, FORT. BOMBAY 1.

Branches :
India :—Ahmedabad — Calcutta — Delhi — Madras — Patna Poona — Rajkot.
Pakistan :—Dacca — Karachi — Lahore.
Foreign :—Cidade-De-Goa — Colombo — Paris — Rangoon & Singapore.

VITAFOLIN

FOLIC ACID & MULTIVITAMIN TABLETS

EACH TABLET CONTAINS:—

FOLIC ACID	5 MG.
VITAMIN A	5000 I. U.
VITAMIN D	1000 I. U.
THIAMIN HYDROCHLORIDE	12 MG.
RIBOFLAVIN	3 MG.
PYRIDOXINE HYDROCHLOR	2 MG.
NIACINAMIDE	50 MG.
ASCORBIC ACID	75 MG.
CALCIUM PANTOTHENATE	5 MG.
VITAMIN E	5 MG.
YEAST CONCENTRATE	50 MG.

As also other factors as derived from unfractioned Liver and Yeast Concentrate would be available from 5 grains Liver and 1½ grains of Yeast Concentrate

Manufactured by:—
C. F. KIRK CO.
NEW YORK, U.S.A.

SOLE DISTRIBUTORS:—
STANDARD DRUG & CHEMICAL CO.
PHONE: 28671 174, HORNBY RD. FORT, BOMBAY GRAMS: "PYRIDOXINE"

SSS BRAND
DIABETOX
for DIABETES Mellitus

These herbal tablets prepared after years of clinical research are now highly recommended by the Medical Profession and used in leading Hospitals.

DIABETOX revives pancreatic tissues, normalises specific gravity, eradicates sugar and tones up the whole system.

HIGHLY RECOMMENDED BY MEDICAL PROFESSION

THE HIMALAYA DRUG Co

251, Hornby Road, BOMBAY.

Available at leading Chemists. Literature and clinical sample on request. DIABETOX is manufactured by Hinco Laboratories who gave you SERPINA, MALARINA. LEUCOL, KURCHINA etc.

INRON

Intravenous Iron injections, for quickest response in cases of iron deficiency anaemias of pregnancy, hook warm etc.

Available in 5 c.c. ampoules.

Samples & literatures on request

Please write to :—

MAYER CHEMICAL WORKS LTD.
78-B, Girish Park North,
Calcutta - 6.

GLUCOSALINE

5% Glucose in Normal Saline (*Pyrogen-free*)

For intravenous, intramuscular hypodermic or rectal administration.

Indicated in :

Haemorrhage, Shock, loss of Fluid, Toxaemia and other emergency conditions.

AVAILABLE IN 540 C. C. TRANSFUSION BOTTLES COMPLETE WITH ATTACHMENT

PASTEUR LABORATORIES LTD.
2, CORNWALLIS STREET, CALCUTTA 6
PHONE: B. B. 3346 TELEGRAM: "PASLAB"

A STANDARDISED PREPARATION OF RAUWOLFIA SERPENTINA

For well over two decades Rauwolfia Serpentina has received universal recognition for its sedative, hypnotic and hypotensive properties. Bromo-Raulfin is prepared from roots of this plant collected from their bases and is assayed and standardised for its alkaloid content during the process of manufacture.

BROMO-RAULFIN

The ideal sedative & hypnotic

EASTERN DRUG COMPANY LIMITED

ALIPORE • CALCUTTA

ASMOLIN

TRADEMARK REGISTERED

An elegant combination for "Asthma" and other acute and chronic Respiratory disorders.

Supplies available in

16 OZS. BOTTLES
6 OZS. BOTTLES
And 3 OZS. BOTTLES

CAN BE HAD FROM ALL CHEMISTS

Free samples on request to the physicians.

Manufacturers G. D. & Co.

88, BENIATOLLA STREET, CALCUTTA 5.

Telegram:—LIMUL. *Phone:* B. B. 5403.

Both in convalescence, as pick-me-up, and in debility as recuperative, and pre-deficiency states, as prophylaxis,

MELGADINE.,

A sure and dependable stand-by, contains Vitamin A and D, B complex C $\frac{}{c}$ Glycerophosphates.

HEPOBYLE.,

Whenever the liver is torpid or sluggish—

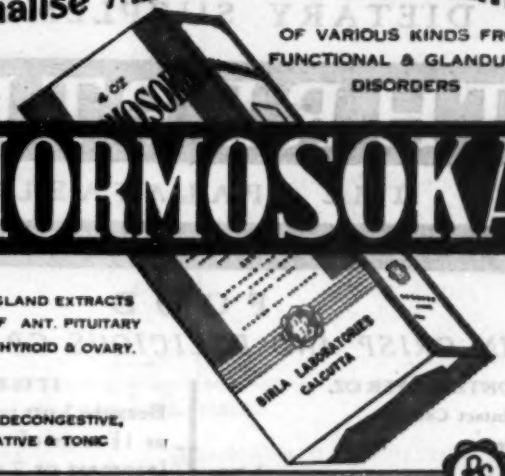
Will correct the wrong. Hepobyle contains 2 bile salts, Soddii Benzoate, Kalmegh as Cholagogues and for excretion-Cascara Sagrada and Glycyrrhizae.

DRAGON CHEMICAL WORKS(R) LTD.,
48, NETAJI SUBAS ROAD,
CALCUTTA 1

To Normalise MENSTRUAL ABNORMALITIES

OF VARIOUS KINDS FROM FUNCTIONAL & GLANDULAR DISORDERS

Re HORMOSOKA

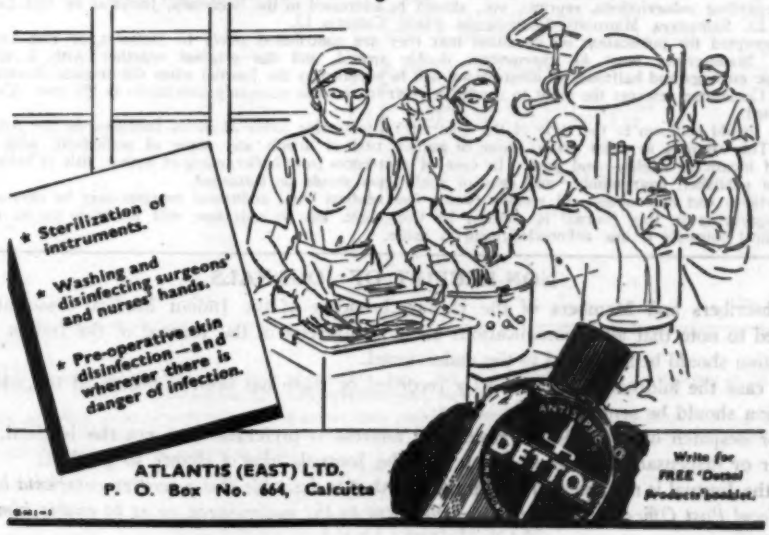


Contains ASOKA PERFECT CYCLE GLAND EXTRACTS OF ANT. PITUITARY THYROID & OVARY.

VEGETABLE LAXATIVE, DECONGESTIVE, ANTISPASMODIC, SEDATIVE & TONIC

BIRLA LABORATORIES, CALCUTTA

'DETTOL' *for Protection*


* Sterilization of instruments.
* Washing and disinfecting surgeons' and nurses' hands.
* Pre-operative skin disinfection—and wherever there is danger of infection.
DETTOL

ATLANTIS (EAST) LTD.
P. O. Box No. 664, Calcutta

Write for FREE 'Dettol Products' booklet.

PROTEIN
DIETARY SUPPLEMENT

THREPTIN

THE PALATABLE

PROTEIN-CARBOHYDRATE-B VITAMINS

FOOD
IN CRISP AND DELICIOUS GRANULES

CONTENTS PER OZ.

50% Protein (Intact Casein)
30% Carbohydrate
Thiamin..... 1 mg.
Riboflavin..... 1 mg.

IT IS ECONOMICAL

Because 3 ozs. supply as much protein as 1½ seers of milk, or 7 ozs. boneless leanmeat or 7 eggs.

Available in 1 lb tins

Particulars from:
RAPTAKOS. BRETT & CO., LTD., WORLI, BOMBAY.

EDITORIAL NOTICE

¶ Manuscripts for publication, books for review and correspondence relating to the editorial management should be sent to the Editor, JOURNAL OF THE INDIAN MEDICAL ASSOCIATION, 23, Samavaya Mansions, Corporation Place, Calcutta 13. Communications regarding subscriptions, reprints, etc., should be addressed to the Secretary, JOURNAL OF THE INDIAN MEDICAL ASSOCIATION, 23, Samavaya Mansions, Corporation Place, Calcutta 13.

¶ Articles are accepted for publication on condition that they are contributed *solely* to JOURNAL OF THE INDIAN MEDICAL ASSOCIATION. Manuscripts *must be typewritten* double spaced, and the *original* together with a copy should be submitted. Zinc etchings and halftones of illustrations will be supplied by the Journal when the original illustrations warrant. The Editorial Committee reserves the right to condense, rewrite or make necessary alterations in the text. Used manuscripts are not returned.

¶ Bibliographies should conform to the style of the Quarterly Cumulative Index Medicus, published by the American Medical Association. This requires in order given: name of author, title of article and name of pediodical, with volume, page, month—day of month in weekly—and year. In case of references from books, name of author, title of book, edition, name and address of publisher, page number and year of publication should be furnished.

¶ Authors of articles and case notes will receive twenty-five reprints free; additional reprints may be obtained at cost.

¶ The matter appearing in this Journal is covered by Copyright, but no objection will be made to its reproduction in reputable medical journals if due acknowledgment is made.

NON-RECEIPT OF JOURNALS

Subscribers and Members of the various branches of the Indian Medical Association are requested to note that all communications about non-receipt of the Journal of the Indian Medical Association should be addressed to the undersigned.

In case the address is not correctly recorded or there has been a change in the address an intimation should be sent forthwith.

For despatch of Journals the residential address is preferable and not the hospital, college, chamber or dispensary address in which case the Journals have a chance to get lost.

If the Journal is not received within the month it is desirable that a *written complaint be lodged at the local Post Office and the reply received sent to the undersigned so as to enable him to take the matter up.*

J. MOJUMDAR, *Hony. Secretary,*
Journal of the Indian Medical Association.

CONTENTS

A Study on Obstetric Shock
—CHUNILAL MUKHERJEE AND SAROJ KUMAR DEY 241

Agglutination Reaction in Diagnosis of Enteric Infections
—BALBIR SINGH 248

Uraemia and its Treatment
—C. H. PRIMLANI, M.B.B.S., F.R.F.P. & S., F.R.C.S. .. 258

Case Notes:

Allergic Manifestation of Roundworm Infection
—N. R. KARODE, M.B.B.S. 260

Editorials:

Drug Research Institute 261
Late Major M. G. Naidu 262
Notes and News 263
Current Medical Literature 267
Correspondence 270
Supplement ii

JOURNAL OF THE INDIAN MEDICAL ASSOCIATION

Editor :
Dr. A. D. Mukharji,

Assistant Editors :
Dr. P. K. Guha,
Dr. A. N. Roy.

Hony. Jt. Secretary, I.M.A.:
Dr. R. Sinha,

Hony. Secretary :
Dr. J. Mojumdar,

Members of Journal Committee :
Dr. P. K. Chatterjee,
Dr. K. P. Das,
Dr. H. K. Roy,
Dr. C. R. Das Gupta,
Dr. C. L. Mukherjee.

INDEX TO ADVERTISERS

	Page
Aeon Chemical Industries Ltd. ..	xxxiv
Alembic Chemical Works Co. Ltd. ..	xv
Amalgamated Chemicals & Dyestuff Co. Ltd.	xxvii
Antiseptic	xiv
Bengal Chemical & Pharmaceutical Works Ltd. .. Front Cover,	xxvii, xxxii
Bengal Immunity Co. Ltd.	xxx
Boots Pure Drug Co. (India) Ltd. ..	xxvi
Brahmachari Research Institute ..	xvi
British Drug Houses (India) Ltd. ..	xxxiv
Burroughs Wellcome & Co. (India) Ltd.	xxxix
Calcutta Chemical Co. Ltd.	ii
Calcutta Clinical Research Association Ltd.	xl
Calcutta Polyclinic, Ltd.	Cover Page 3
Chas. Pfizer & Co., Inc.	xli
Chowgule & Co. (Hind) Ltd. ..	xxxi
Cilag-Hind Ltd.	xxxiii
Cipla Ltd.	v, xxii
Crookes Laboratories Ltd.	xxxviii
Dragon Chemical Works (R) Ltd. ..	xliv
East Asiatic Co., Ltd.	xxix
Eastern Drug Co. Ltd.	iii, xliv
East India Pharmaceutical Works Ltd. ..	xxiv
Fairdeal Corporation Ltd.	xvi
G. D. & Co.	xliv
Glaxo Laboratories (India) Ltd. ..	vi, vii
Gluconate Ltd.	xviii
Herts Pharmaceuticals Ltd. ..	xxxvii
Himalaya Drug Co.	xliii
Hind Chemicals Ltd.	xix
I.M.S. Laboratory Ltd.	xvii
Infa Ltd.	xi

	Page
Imperial Chemical Industries (India) Ltd.	Cover Page 2
Indian Chemical & Therapeutics Works Ltd.	xx
Indian Health Institute & Laboratory Ltd.	xxxv
Indo-Pharma Pharmaceutical Works ..	xx
International Radios & Television Ltd. ..	xii
John Wyeth & Brother Ltd.	iv xxxvi
Lederle Laboratories (India) Ltd. ..	i
Lister Antiseptics	xl
Mac Laboratories Ltd.	xii
May & Baker (India) Ltd.	ix, xxiii
Mayer Chemical Works Ltd. ..	xliii
Merck (North America) Inc. ..	viii
Modern Drug House	xlii
Murray & Co.	xlii
Mysore Industrial & Testing Laboratory Ltd.	xiv
Nestles' Products (India) Ltd. ..	xxi
Oriental Research & Chemical Laboratory Ltd.	xxxv
Pasteur Laboratories Ltd. ..	xliii
Sandoz Ltd.	xxviii
Schweizhind (Overseas) Agencies ..	xxxii
Scientific Indian Glass Co., Ltd. ..	xiv
Scientific Publication Concern ..	xlii
Shanti Trading Co.	xl
Smith Kline & French International Co. (Pharmed Ltd.)	xxv
Standard Drug & Chemical Co. ..	xliii
Standard Medical Research Institute Ltd.	xviii
T. M. Thakore & Co.	xlii
Worli Chemical Works Ltd. ..	xiii
Ward, Blenkinsop & Co. (India) Ltd. ..	x
W. T. Surén & Co., Ltd.	Back Cover

Prescribe with confidence :—

POLY-AMINOS—an aminoacid preparation of excellent taste for oral administration : Composed of all aminoacids including Methionine, Sodi-Glycerophosphate, Formate, Glycerine & Alcohol.

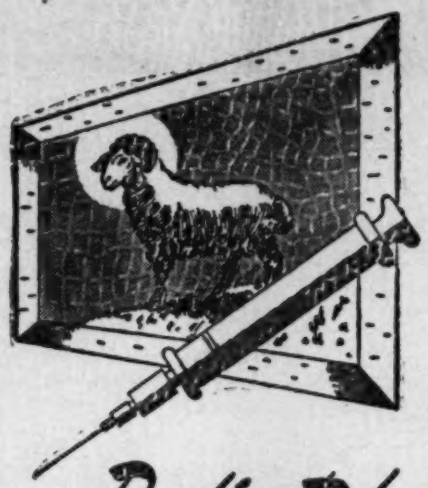
Growing appetite, sense of well being and freedom from gastric irritation are the immediate effect of this preparation, which successfully combats malnutrition and meets with almost all the protein deficiencies and promotes the power of healing after operation as well.

Sold in 6 oz phials.

Full particulars from :—

CALCUTTA POLYCLINIC LTD.
6-A, S. N. Banerjee Road, Calcutta 13.

Printed by B. K. Sen at MODERN INDIA PRESS, 7, WELLINGTON SQUARE, CALCUTTA and published by DR. PRAKASH CHANDRA GHOSH, at Hindusthan Buildings, Room No. 23, Corporation Place, Calcutta 13.
EDITOR—Dr. A. D. MUKHARJI



Dedicated...

TO NATIONAL RECUPERATION

T.C.F. Whole Liver Extract prepared from healthy young sheep liver is the leading choice of the medical profession in Macrocytic (nutritional) Anaemias, Pregnancy Anaemias and Sprue occurring in India.

It contains all anti-anaemic principles and extrinsic factors including Castle's Factor and Folic Acid (Vitamin M) in natural proportions.

Since deficiency anaemias constitute a large percentage of anaemic conditions in India, T.C.F. *Whole Liver Extract supplemented with Vitamins C and B-Complex* covers every possible contingency.

Packed in 2 cc. & 5 cc. ampoules, and 10 cc. vials.

T.C.F.

CTF

WHOLE LIVER EXTRACT

PLAIN—as well as SUPPLEMENTED WITH VITAMINS C & B-COMPLEX—for intramuscular injection.

Product of:
TEDDINGTON CHEMICAL FACTORY LTD., BOMBAY

Sole Distributors:
W.T. SUREN & CO., LTD., P.O. BOX 229, BOMBAY, 1.
Branches: CALCUTTA: P. O. Box 672. MADRAS: P. O. Box 1286.